

Government of Pakistan

National Vocational and Technical Training Commission

Prime Minister's Youth Skill Development Program (PMYSDP)

"Skills for All"



Course Contents / Lesson Plan

Course Title: Hi-tech Automotive Junior Technician

Duration: 3 Months

Trainer Name	
Author	Muhammad Arslan, Cluster Manager, PSIC
Course Title	Hi-tech Automotive Junior Technician
Objectives and Expectations	<p>Employable skills and hands-on practice in Graphic Designing and video editing</p> <p>The Hi-tech Automotive Technician course is a comprehensive and intensive program designed to equip students with the skills and knowledge required to excel in the fast-paced and technologically advanced automotive industry. Over the duration of 6 months, students will gain a deep understanding of automotive systems, with a focus on <i>electrical and electronic components, engine mechanics, drivetrain systems, and advanced diagnostic techniques</i>. Through a combination of classroom instruction, hands-on practice, students will develop the essential skills needed to diagnose and repair complex automotive issues using advanced tools. The course emphasizes employable skills such as <i>problem-solving, critical thinking, teamwork, and customer service</i>, ensuring that pass-outs are well-prepared to meet the demands of the industry. Upon completion of the course, students will be equipped with the technical expertise and hands-on experience necessary to pursue a successful career as a high-tech automotive technician.</p> <p><u>Main Expectations:</u></p> <p>In short, the course under reference should be delivered by professional instructors in such a robust hands-on manner that the trainees are comfortably able to employ their skills for earning money (through wage/self-employment) at its conclusion.</p> <p>Students are expected to develop technical proficiency in automotive systems, including electrical and electronic components, engine mechanics, drivetrain systems, and advanced diagnostic techniques. They should demonstrate strong diagnostic and problem-solving skills, along with industry-relevant knowledge of emerging trends and safety standards. Hands-on experience is emphasized, allowing students to apply theoretical knowledge in real-world scenarios. Effective communication, collaboration, and professionalism are expected, ensuring students can interact with clients and colleagues and provide exceptional customer service. By meeting these expectations, students will be well-equipped to enter the automotive industry as competent technicians, ready to contribute effectively to the field.</p> <p>The instructors should therefore be experienced enough to be able to identify the training needs for the possible market roles available out there. Moreover, they should also know the strengths and weaknesses of each trainee to prepare them for such market roles during/after the training.</p> <ol style="list-style-type: none"> i. Specially designed practical tasks to be performed by the trainees have been included in the Annexure-I to this document. The record of all tasks performed individually or in groups must be preserved by the management of the training Institute clearly labeling name, trade, session, etc so that these are ready to be physically inspected/verified through monitoring visits from time to time. The weekly distribution of tasks has also been indicated in the weekly lesson plan given in this document. ii. To materialize the main expectations, a special module on <u>Job Search & Entrepreneurial Skills</u> has been included in the latter part of this

course (5th & 6th month) through which, the trainees will be made aware of the Job search techniques in the local as well as international job markets (Gulf countries). Awareness around the visa process and immigration laws of the most favored labor destination countries also form a part of this module. Moreover, the trainees would also be encouraged to venture into self-employment and exposed to the main requirements in this regard. It is also expected that a sense of civic duties/roles and responsibilities will also be inculcated in the trainees to make them responsible citizens of the country.

iii. A module on **Work Place Ethics** has also been included to highlight the importance of good and positive behavior in the workplace in the line with the best practices elsewhere in the world. An outline of such qualities has been given in the Appendix to this document. Its importance should be conveyed in a format that is attractive and interesting for the trainees such as through PPT slides +short video documentaries. Needless to say that if the training provider puts his heart and soul into these otherwise non-technical components, the image of the Pakistani workforce would undergo a positive transformation in the local as well as international job markets.

To maintain interest and motivation of the trainees throughout the course, modern techniques such as:

- Motivational Lectures
- Success Stories
- Case Studies

These techniques would be employed as an additional training tool wherever possible (these are explained in the subsequent section on Training Methodology).

Lastly, evaluation of the competencies acquired by the trainees will be done objectively at various stages of the training and a proper record of the same will be maintained. Suffice to say that for such evaluations, practical tasks would be designed by the training providers to gauge the problem-solving abilities of the trainees.

(i) **Motivational Lectures**

The proposed methodology for the training under reference employs motivation as a tool. Hence besides the purely technical content, a trainer is required to include elements of motivation in his/her lecture. To inspire the trainees to utilize the training opportunity to the full and strive towards professional excellence. Motivational lectures may also include general topics such as the importance of moral values and civic role & responsibilities as a Pakistani. A motivational lecture should be delivered with enough zeal to produce a deep impact on the trainees. It may comprise of the following:

- Clear Purpose to convey the message to trainees effectively.
- Personal Story to quote as an example to follow.
- Trainees Fit so that the situation is actionable by trainees and not represent a just idealism.
- Ending Points to persuade the trainees on changing themselves.

A good motivational lecture should help drive creativity, curiosity, and spark the desire needed for trainees to want to learn more.

The impact of a successful motivational strategy is amongst others commonly visible in increased class participation ratios. It increases the trainees' willingness to be engaged on the practical tasks for a longer time without boredom and loss of interest because they can see in their mind's eye where their hard work would take them in short (1-3 years); medium (3 -10 years) and long term (more than 10 years).

As this tool is expected that the training providers would make arrangements for regular well planned motivational lectures as part of a coordinated strategy interspersed throughout the training period as suggested in the weekly lesson plans in this document.

Course-related motivational lectures online link is available in **Annexure-II**.

(ii) Success Stories

Another effective way of motivating the trainees is using Success Stories. Its inclusion in the weekly lesson plan at regular intervals has been recommended till the end of the training.

A success story may be disseminated orally, through a presentation, or using a video/documentary of someone that has risen to fortune, acclaim, or brilliant achievement. A success story shows how a person achieved his goal through hard work, dedication, and devotion. An inspiring success story contains compelling and significant facts articulated clearly and easily comprehensible words. Moreover, it is helpful if it is assumed that the reader/listener knows nothing of what is being revealed. The optimum impact is created when the story is revealed in the form of:-

- Directly in person (At least 2-3 cases must be arranged by the training institute)
- Through an audio/ videotaped message (2-3 high-quality videos must be arranged by the training institute)

It is expected that the training provider would collect relevant high-quality success stories for inclusion in the training as suggested in the weekly lesson plan given in this document.

The suggestive structure and sequence of a sample success story and its various shapes can be seen in **Annexure III**.

(iii) Case Studies

Where a situation allows, case studies can also be presented to the trainees to widen their understanding of the real-life specific problem/situation and to explore the solutions.

In simple terms, the case study method of teaching uses a real-life case example/a typical case to demonstrate a phenomenon in action and explain theoretical as well as practical aspects of the knowledge related to the same. It is an effective way to help the trainees comprehend in depth both the theoretical and practical aspects of the complex phenomenon in depth with ease. Case teaching can also stimulate the trainees to participate in discussions and thereby boost their confidence. It also makes the classroom atmosphere interesting thus maintaining the trainee interest in training till the end of the course.

Depending on suitability to the trade, the weekly lesson plan in this document may suggest case studies be presented to the trainees. The trainer may adopt a PowerPoint presentation or video format for such case studies whichever is deemed suitable but only those cases must be selected that are relevant and of a learning value.

The Trainees should be required and supervised to carefully analyze the cases.

For this purpose, they must be encouraged to inquire and collect specific information/data, actively participate in the discussions, and intended solutions to the problem/situation.

Case studies can be implemented in the following ways: -

- i. A good quality trade-specific documentary (At least 2-3 documentaries must be arranged by the training institute)
- ii. Health & Safety case studies (2 cases regarding safety and

	<p>iii. industrial accidents must be arranged by the training institute) Field visits (At least one visit to a trade-specific major industry/site must be arranged by the training institute)</p>
Entry-level of trainees	Intermediate / Matric Science
Learning Outcomes of the course	<p>By the end of this course, students will be able to:</p> <ol style="list-style-type: none"> 1. Understand fundamentals of automotive technology, including safety practices, tools, and equipment used in the automotive workshop. 2. Demonstrate knowledge of electrical systems in vehicles. 3. Comprehend engine basics. 4. Gain proficiency in fuel systems. 5. Develop expertise in ignition systems. 6. Acquire knowledge of drivetrain systems. 7. Understand suspension and steering systems. 8. Gain proficiency in brake systems. 9. Comprehend HVAC systems. 10. Develop expertise in advanced engine diagnostics. 11. Acquire advanced diagnostic tools and techniques, including scanning tools and software. 12. Understand hybrid and electric vehicle technology, including hybrid powertrain components, battery systems, charging, and diagnose and service hybrid vehicles. 13. Develop customer service skills.
Course Execution Plan	<p>The total duration of the course: 3 months (12 Weeks) Class hours: 4 hours per day Theory: 20% Practical: 80% Weekly hours: 20 hours per week Total contact hours: 260 hours</p>
Companies offering jobs in the respective trade	<ol style="list-style-type: none"> 1. Original Equipment Manufacturers (OEMs)/Vehicle Assembles 2. Automotive Parts Manufacturers 3. 3S workshops 4. Automotive Technology Companies 5. Automotive Research and Development Institutes
Job Opportunities	<ol style="list-style-type: none"> 1. Automotive Junior Technician 2. Diagnostic Junior Technician 3. Electrical Systems Junior Technician 4. Drivetrain Junior Technician 5. Hybrid and Electric Vehicle Junior Technician
No of Students	25
Learning Place	Classroom / Lab
Instructional Resources	<ol style="list-style-type: none"> 1. AA1Car - AA1Car is a comprehensive automotive repair and diagnostic resource website that covers various topics, including electrical systems, engine performance, and troubleshooting. <u>Website: AA1Car</u> 2. Auto Repair Help - Auto Repair Help provides a wide range of articles, tutorials, and resources for automotive technicians. It covers topics such as diagnostics, repairs, and maintenance procedures. <u>Website: Auto Repair Help</u> 3. Car Bibles - Car Bibles offers detailed guides, tutorials, and tips on various automotive systems, including electrical, engine, and suspension. It provides in-depth explanations and step-by-step instructions. <u>Website: Car Bibles</u>

4. **iATN (International Automotive Technicians' Network)** - iATN is an online community and resource platform where automotive technicians can access forums, technical articles, and resources shared by experienced professionals. It offers a wealth of information and the opportunity to connect with peers.
Website: [iATN](#)
5. **AllData** - AllData provides comprehensive automotive repair and diagnostic information, including technical service bulletins, wiring diagrams, and troubleshooting guides. It is a valuable resource for Hi-tech Automotive Technicians looking for detailed repair information.
Website: [AllData](#)
6. **Automotive Technology Forums on Reddit:** The Automotive Technology subreddit is a community where automotive enthusiasts and professionals discuss various topics related to automotive technology, repairs, and diagnostics. It can be a valuable resource for exchanging knowledge and getting answers to specific questions.
[Link: <https://www.reddit.com/r/AutomotiveTech/>]
7. **Automotive Technology on Wikipedia:** The Wikipedia page on Automotive Technology provides an overview of various automotive systems, technologies, and concepts. It can serve as a starting point for understanding the fundamentals.
[Link: https://en.wikipedia.org/wiki/Automotive_technology]
8. **ScannerDanner** - ScannerDanner's YouTube channel offers educational videos on automotive diagnostics, electrical systems, and troubleshooting techniques. The channel provides valuable insights into complex automotive issues.
YouTube: [ScannerDanner](#)
9. **South Main Auto Repair** - South Main Auto Repair is a YouTube channel hosted by Eric O., an experienced automotive technician. The channel features diagnostic and repair videos, including electrical troubleshooting and advanced system repairs.
YouTube: [South Main Auto Repair](#)
10. **Engineering Explained** - Engineering Explained is a YouTube channel that covers various engineering concepts, including automotive technology. It offers informative videos on topics like engines, transmissions, and vehicle dynamics.
YouTube: [Engineering Explained](#)

Scheduled Weeks	Module Title	Days	Hour	Learning Units	Home Assignment
Week 1	Introduction to Automotive Technology	Day 1	Hour-1 to 4	Motivational Lecture (For further detail please see Page No: 32) <ul style="list-style-type: none"> • Course Introduction 	<ul style="list-style-type: none"> •Task 1 •Task 2 <i>Details may be seen at Annexure-I</i>
		Day 2	Hour-1 to 2	<ul style="list-style-type: none"> • Overview of the automotive industry 	
			Hour-3 to 4	<ul style="list-style-type: none"> • Job market Survey career opportunities 	
		Day 3	Hour-1 to 4	Safety practices in the automotive workshop	
		Day 4	Hour-1 to 4	Introduction to tools and equipment Students will be familiarized with different automotive tools and their uses	
		Day 5	Hour-1 to 4	Students will be familiarized with different automotive tools and their uses	
Week 2	Automotive Electrical Systems	Day 1	Hour-1 to 2	Motivational Lecture (For further detail please see Page No: 32)	<ul style="list-style-type: none"> •Task 3 To •Task 13 <i>Details may be seen at Annexure-I</i>
			Hour-3 to 4	Fundamentals of electrical circuits Students will be familiarized to solve electrical circuit problems and analyze circuit diagrams	
		Day 2	Hour-1 to 4	<ul style="list-style-type: none"> • Overview of automotive electrical systems. • Understanding electrical circuits and wiring diagrams. • Safety precautions when working with automotive electrical systems. 	
				Understanding wiring diagrams Students will be able to interpret and analyze wiring diagrams for automotive electrical	
		Day 3	Hour-1 to 4	Understanding wiring diagrams Students will be able to interpret and analyze wiring diagrams for automotive electrical	

Scheduled Weeks	Module Title	Days	Hour	Learning Units	Home Assignment
				systems	
		Day 4	Hour-1 to 4	<p>Continue understanding wiring diagrams</p> <ul style="list-style-type: none"> Basics of electrical circuits and wiring. Reading and interpreting wiring diagrams. Diagnosis and repair of wiring harness issues. 	
		Day 5	Hour-1 to 4	<p>Electrical components and their functions</p> <p>Students will be able to identify and describe the functions of common electrical components</p> <ul style="list-style-type: none"> Understanding electrical system components (such as batteries, alternators, starters, etc.). Function and operation of electrical system components. Diagnosis and repair of common electrical component issues. <p>Troubleshooting electrical issues</p> <ul style="list-style-type: none"> Students will be able to diagnose and repair common electrical problems in vehicles 	
Week 3	Engine Basics	Day 1	Hour-1 to 2	Motivational Lecture (For further detail please see Page No: 32)	<ul style="list-style-type: none"> Task 14 To Task 19 <p><i><u>Details may be seen at Annexure-1</u></i></p>
			Hour-3 to 4	<p>Internal combustion engine principles</p> <p>Students will be able to explain the working principles of an internal combustion engine</p>	

Scheduled Weeks	Module Title	Days	Hour	Learning Units	Home Assignment
		Day 2	Hour-1 to 2	<p>Engine components and their functions</p> <p>Students will be familiarized to Identify and describe the major components of an engine</p> <ul style="list-style-type: none"> • Overview of internal combustion engines. • Understanding engine terminology and components. <p>Safety precautions when working with engines.</p>	
			Hour-3 to 4	<p>Engine lubrication system</p> <p>Students will understand lubrication system in an engine</p> <ul style="list-style-type: none"> • Understanding engine lubrication systems. • Diagnosis and repair of lubrication system issues. <p>Proper maintenance of lubrication systems.</p>	
		Day 3	Hour-1 to 2	<p>Engine Cooling System</p> <p>Students will understand cooling system in an engine</p> <ul style="list-style-type: none"> • Overview of engine cooling systems and their importance. • Understanding the purpose and function of engine coolant. • Safety precautions when working with engine cooling systems. <p>Understanding the components of an engine cooling system (radiator, water pump, thermostat, etc.).</p>	
			Hour-3 to 4	<p>Continue with Engine Cooling System</p>	

Scheduled Weeks	Module Title	Days	Hour	Learning Units	Home Assignment
				<ul style="list-style-type: none"> • Function and operation of cooling system components. • Diagnosis and repair of common cooling system component issues. • Understanding the principles of engine cooling. • Heat transfer processes in the cooling system. • Coolant flow and circulation within the engine. • Types of engine coolant and their characteristics. • Proper coolant selection and mixing. • Testing and measuring coolant properties. • Diagnosis and repair of radiator issues (leaks, blockages, etc.). • Understanding radiator construction and design. • Operation and troubleshooting of cooling fan systems. • Diagnosis and repair of water pump issues. • Understanding water pump operation and maintenance. • Thermostat function and operation. • Diagnostic techniques for identifying cooling system issues. • Use of pressure testers and other diagnostic tools. <p>Troubleshooting</p>	

Scheduled Weeks	Module Title	Days	Hour	Learning Units	Home Assignment
				overheating and coolant loss problems.	
		Day 4	Hour-1 to 4	Engine maintenance and diagnosis Students will be able to perform routine maintenance tasks on an engine and diagnose common issues <ul style="list-style-type: none"> • Diagnose engine problems of vehicle • Service engine gaskets (e.g. head, manifold) of vehicle 	
		Day 5	Hour-1 to 4	Continue Engine maintenance and diagnosis <ul style="list-style-type: none"> • Service engine seals of vehicle • Service engine cooling system (e.g. water pump, radiator, coolant flush) of vehicle • Service engine lubrication system (e.g. oil pump) of vehicle • Service valve train components of vehicle Service Engine Block Components of vehicle	
Week 4	Fuel Systems	Day 1	Hour-1 to 2	Motivational Lecture (For further detail please see Page No: 32)	<ul style="list-style-type: none"> • Task 20 To • Task 22 <u>Details may be seen at Annexure-I</u>
			Hour-3 to 4	Fuel injection systems Students will be able to understand the working of fuel injection systems in vehicles <ul style="list-style-type: none"> • Overview of fuel injection systems and their advantages. • Understanding the role of fuel injectors in the combustion 	

Schedu led Weeks	Module Title	Days	Hour	Learning Units	Home Assignm ent
				<p>process.</p> <ul style="list-style-type: none"> • Safety precautions when working with fuel injection systems. • Overview of different types of fuel injection systems (such as electronic, direct, sequential, etc.). • Understanding the differences between fuel injection systems. 	
		Day 2	Hour-1 to 4	<p>Carburetor operation Students will be able to identify various components of carburetors</p>	
		Day 3	Hour-1 to 4	<p>Carburetor troubleshooting Students will be able to identify and troubleshoot common issues with carburetors</p>	
		Day 4	Hour-1 to 4	<p>Fuel pumps and filters Students will be able to describe the function and maintenance of fuel pumps and filters</p> <ul style="list-style-type: none"> • Understanding the components of a fuel injection system (fuel pump, injectors, pressure regulator, etc.). • Fuel filter replacement and cleaning. • Function and operation of fuel injection system components. <p>Diagnosis and repair of common fuel injection component issues.</p>	

Scheduled Weeks	Module Title	Days	Hour	Learning Units	Home Assignment
		Day 5	Hour-1 to 4	<p>Fuel system maintenance and diagnosis</p> <p>Students will be able to perform maintenance tasks on a fuel system and diagnose fuel-related problems</p> <ul style="list-style-type: none"> • Diagnose fuel system problems of vehicle • Service fuel metering system (e.g. injectors, regulators, switching valve) of vehicle • Diagnostic techniques for identifying fuel injection system problems. • Use of scan tools and other diagnostic equipment. <p>Interpretation of diagnostic trouble codes (DTCs) related to fuel injection systems.</p>	
Week 5	Ignition Systems	Day 1	Hour-1 to 2	<p>Motivational Lecture (For further detail please see Page No: 32)</p>	<ul style="list-style-type: none"> • Task 23 To • Task 25 <p><i><u>Details may be seen at Annexure-1</u></i></p>
			Hour-3 to 4	<p>Spark plugs and ignition coils</p> <p>Students will be able to understand the role of spark plugs and ignition coils in the ignition system</p> <ul style="list-style-type: none"> • Overview of spark plugs and their role in the ignition process. • Understanding the function of ignition coils. • Safety precautions when working with spark plugs and ignition coils. • Understanding the 	

Scheduled Weeks	Module Title	Days	Hour	Learning Units	Home Assignment
				<p>components of a spark plug.</p> <ul style="list-style-type: none"> • Different types of spark plugs (copper, platinum, iridium, etc.). • Proper spark plug selection for different engines and applications. • Signs of worn or fouled spark plugs. • Inspection and interpretation of spark plug conditions. • Proper removal and installation of spark plugs. • Understanding the function of ignition coils in the ignition system. • Testing ignition coils for proper operation. <p>Diagnosis and repair of ignition coil issues.</p>	
		Day 2	Hour-1 to 4	<p>Distributors and ignition timing</p> <p>Students will understand the operation of distributors and ignition timing</p> <ul style="list-style-type: none"> • Understanding the components of the ignition system (spark plug wires, distributor, ignition module, etc.). • Diagnosis and repair of common ignition system component issues. <p>Timing adjustment and ignition system calibration.</p>	

Scheduled Weeks	Module Title	Days	Hour	Learning Units	Home Assignment
		Day 3	Hour-1 to 4	<p>Electronic ignition systems Students will be familiarized with working of electronic ignition systems</p> <ul style="list-style-type: none"> Diagnostic techniques for identifying ignition system problems. Use of specialized tools and equipment for ignition system diagnosis. <p>Interpretation of diagnostic trouble codes (DTCs) related to the ignition system.</p>	
		Day 4	Hour-1 to 4	<p>Ignition system diagnosis and repair Students will be able to diagnose and repair ignition system issues</p> <ul style="list-style-type: none"> Diagnose ignition system problems (e.g. scan tool) of vehicle Service distributor and C.B point of ignition system Service spark plugs & wires of vehicle Service emission control system of vehicle <p>Perform ignition road test of vehicle</p>	
		Day 5	Hour-1 to 4	<p>Ignition system diagnosis and repair Students will be able to diagnose and repair ignition system issues</p> <ul style="list-style-type: none"> Diagnose ignition system problems (e.g. scan tool) of vehicle Service distributor and C.B point of ignition system Service spark plugs & wires of vehicle Service emission control system of vehicle <p>Perform ignition road test of vehicle</p>	
Week 6	Drivetrain Systems	Day 1	Hour-1 to 2	Success stories (For further detail please see Page No: 33)	<ul style="list-style-type: none"> Task 26 To Task 31 <p><u>Details may be seen at</u></p>
			Hour-3 to 4	Transmission types and operation	

Schedu led Weeks	Module Title	Days	Hour	Learning Units	Home Assignm ent
				Students will be able to identify and learn about different types of transmissions and explain their operation	<u>Annexure-1</u>
		Day 2	Hour-1 to 4	Clutch and gearbox maintenance Students will be able to perform maintenance tasks on clutches and gearboxes	
		Day 3	Hour-1 to 4	Driveshaft and differential operation Students will understand the function and operation of driveshafts and differentials <ul style="list-style-type: none"> • Overview of the drivetrain system and its components. • Understanding the role of driveshafts and differentials. • Safety precautions when working with driveshafts and differentials. • Understanding the construction and components of driveshafts. • Different types of driveshafts (one-piece, two-piece, etc.). • Inspection and maintenance of driveshaft components. • Proper procedures for removing and installing driveshafts. • Use of specialized tools and equipment for driveshaft work. Torque specifications and tightening sequences.	

Scheduled Weeks	Module Title	Days	Hour	Learning Units	Home Assignment
		Day 4	Hour-1 to 4	<p>Drivetrain troubleshooting Students will be able to diagnose and troubleshoot drivetrain issues</p> <ul style="list-style-type: none"> • Inspection of driveshafts for wear, damage, or imbalance. • Diagnosis and repair of common driveshaft issues (vibration, noise, etc.). • Balancing and alignment of driveshafts. • Diagnostic techniques for identifying differential issues. • Diagnosis and repair of common differential problems (bearing failure, gear wear, etc.). • Differential fluid inspection and replacement. • Rebuilding differentials with new bearings, seals, and gears. • Differential gear pattern adjustment. <p>Differential setup and backlash adjustment.</p>	
		Day 5	Hour-1 to 4	<p>Students will understand:</p> <ul style="list-style-type: none"> • Transmission types and operation • Clutch and gearbox maintenance • Driveshaft and differential operation • Drivetrain troubleshooting • Service manual clutch system of 	

Schedu led Weeks	Module Title	Days	Hour	Learning Units	Home Assignm ent
				vehicle Service automatic transmission of vehicle	
Week 7	Suspensi on and Steering System	Day 1	Hour-1 to 2	Motivational Lecture (For further detail please see Page No: 32)	<ul style="list-style-type: none"> • Task 32 To • Task 35 <p><i><u>Details may be seen at Annexure-1</u></i></p>
			Hour-3 to 4	Types of suspension systems Students will be able to understand different types of suspension systems used in vehicles <ul style="list-style-type: none"> • Overview of suspension systems and their importance. Understanding the role of suspension in vehicle handling and ride comfort. 	
		Day 2	Hour-1 to 4	Continue Types of suspension systems <ul style="list-style-type: none"> • Safety precautions when working with suspension systems. • Dependent Suspension Systems: <ul style="list-style-type: none"> ○ Solid Axle Suspension ○ Leaf Spring Suspension ○ Torsion Beam Suspension • Independent Suspension Systems: <ul style="list-style-type: none"> ○ Double Wishbone Suspension ○ Multi-link Suspension ○ Air Suspension 	

Scheduled Weeks	Module Title	Days	Hour	Learning Units	Home Assignment
		Day 3	Hour-1 to 4	Steering system components and operation Students will be familiarized with components of a steering system and their operation	
		Day 4	Hour-1 to 4	Wheel alignment and balancing Students will be able to perform wheel alignment and balancing procedures	
		Day 5	Hour-1 to 4	Suspension and steering system maintenance Students will be able to perform maintenance tasks on suspension and steering systems <ul style="list-style-type: none"> • Diagnose steering and/or suspension problems of vehicle • Service suspension components of vehicle Service steering system of vehicle	
Week 8	Brake Systems	Day 1	Hour-1 to 2	Success stories (For further detail please see Page No: 33)	<ul style="list-style-type: none"> • Task 36 • Task 40 <i>Details may be seen at Annexure-I</i>
			Hour-3 to 4	Brake components and their functions Students will be able to identify and describe components of a brake system and their functions	
		Day 2	Hour-1 to 4	Brake system and operation principles Students will be able to understand the operation and principles of a brake system	

Scheduled Weeks	Module Title	Days	Hour	Learning Units	Home Assignment
		Day 3	Hour-1 to 4	Brake fluid flushing and bleeding Students will be able to perform brake fluid flushing and bleeding	
		Day 4	Hour-1 to 4	Brake system diagnosis and repair Students will be familiarized with diagnoses and repair of brake system issues <ul style="list-style-type: none"> • Perform inspection & diagnosis of brakes • Rebuild/ replace brake master cylinder of vehicle • Rebuild/ replace wheel cylinders of vehicle 	
		Day 5	Hour-1 to 4	Continue Brake system diagnosis and repair <ul style="list-style-type: none"> • Rebuild/replace calipers of vehicle • Service parking brake system of vehicle • Bleed brake system of vehicle • Diagnose fault codes of ABS/TCS/VSA/VSC • Service ABS/TCS/VSA/VSC systems of vehicle Conduct road test of vehicle to verify repair	
Week 9	HVAC System	Day 1	Hour-1 to 2	Motivational Lecture (For further detail please see Page No: 32)	<ul style="list-style-type: none"> • Task 41 To • Task 43 <i>Details may be seen at</i>

Scheduled Weeks	Module Title	Days	Hour	Learning Units	Home Assignment
			Hour-3 to 4	<p>Air conditioning and heating principles Students will understand the principles of air conditioning and heating systems in vehicles</p> <ul style="list-style-type: none"> • Basic principles of heating, ventilation, and air conditioning. <p>Safety precautions when working with HVAC systems.</p>	<u>Annexure-1</u>
		Day 2	Hour-1 to 4	<p>HVAC system components and operation Students will be able to identify and describe components of an HVAC system and their operation</p> <ul style="list-style-type: none"> • Understanding the operation of heating and cooling components. • Control systems and sensors used in HVAC systems. <p>Airflow management and distribution.</p>	
		Day 3	Hour-1 to 4	<p>Refrigerant handling and charging Students will be familiarized handle and charge refrigerant in an</p>	

Scheduled Weeks	Module Title	Days	Hour	Learning Units	Home Assignment
		Day 4	Hour-1 to 4	<p>HVAC system</p> <ul style="list-style-type: none"> Understanding refrigerant types and properties. Safe handling and storage of refrigerants. <p>Compliance with environmental regulations related to refrigerants.</p>	
		Day 5	Hour-1 to 4	<p>HVAC system troubleshooting</p> <p>Students will be able to diagnose and troubleshoot HVAC system issues</p> <ul style="list-style-type: none"> Troubleshooting techniques for identifying HVAC system issues. Using diagnostic tools and equipment for HVAC system diagnosis. <p>Repair and maintenance procedures for HVAC components.</p>	
Week 10	Advanced Engine Diagnostics	Day 1	Hour-1 to 2	<p>Success stories (For further detail please see Page No, 24)</p>	<ul style="list-style-type: none"> Task 44 To Task 48 <p><u>Details may be seen at Annexure-I</u></p>
			Hour-3 to 4	<p>Engine performance analysis</p> <p>Students will be able to analyze and evaluate engine performance using diagnostic tools</p> <ul style="list-style-type: none"> Overview of engine diagnostic procedures and techniques. Understanding the importance of accurate engine diagnostics. <p>Safety precautions when working with engine</p>	

Scheduled Weeks	Module Title	Days	Hour	Learning Units	Home Assignment
				diagnostic tools and equipment.	
		Day 2	Hour-1 to 4	Fuel injection system diagnostics Students will be able to diagnose and troubleshoot fuel injection system issues <ul style="list-style-type: none"> • Diagnosis and repair of fuel system issues. • Understanding fuel injection systems and components. Use of diagnostic tools to analyze fuel system performance	
		Day 3	Hour-1 to 4	Emissions control systems Students will be able to explain the function and operation of emissions control systems <ul style="list-style-type: none"> • Overview of exhaust emission control systems (such as EGR, catalytic converters, etc.). 	
		Day 4	Hour-1 to 4	<ul style="list-style-type: none"> • Diagnosis and repair of exhaust emission control system issues. Compliance with emission regulations and testing procedures	
		Day 5	Hour-1 to 4	On-board diagnostics (OBD) Utilize on-board diagnostics for engine diagnostics	
Week 11	Hybrid and Electric Vehicle Technology	Day 1	Hour-1 to 2	Motivational Lecture (For further detail please see Page No: 32)	<ul style="list-style-type: none"> • Task 49 To • Task 60 <i>Details may be seen at Annexure-1</i>
			Hour-2 to 4	Introduction to hybrid and electric vehicles Students will be able to	

Scheduled Weeks	Module Title	Days	Hour	Learning Units	Home Assignment
				<p>understand the basic concepts and principles of hybrid and electric vehicles</p> <ul style="list-style-type: none"> • Overview of hybrid and electric vehicle technology. • Understanding the differences between hybrid and electric vehicles. <p>Safety precautions when working with high-voltage systems.</p>	
		Day 2	Hour-1 to 4	<p>Hybrid powertrain components</p> <p>Students will be able to identify and describe the components of a hybrid powertrain</p> <ul style="list-style-type: none"> • Understanding hybrid powertrain architecture. • Components of hybrid vehicles (such as batteries, electric motors, etc.). <p>Diagnosis and repair of hybrid powertrain issues.</p>	
		Day 3	Hour-1 to 4	<p>Battery systems and charging</p> <p>Students will be able to understand battery systems and charging procedures for hybrid and electric vehicles</p> <ul style="list-style-type: none"> • Overview of electric vehicle power systems. • Battery technologies and management systems. <p>Diagnosis and repair of electric vehicle power system issues.</p>	

Scheduled Weeks	Module Title	Days	Hour	Learning Units	Home Assignment
	Handle Customer Complaints/Requirements	Day 4	Hour-1 to 4	Diagnosing and servicing hybrid vehicles Students will be able to perform diagnostics and maintenance tasks on hybrid vehicles <ul style="list-style-type: none"> • Use of specialized diagnostic equipment for hybrid and electric vehicles. • Interpretation of diagnostic codes and data. • Diagnosis and repair of complex hybrid and electric vehicle issues. • Routine maintenance procedures for hybrid and electric vehicles. • Service and replacement of hybrid and electric vehicle components. Best practices for maximizing hybrid and electric vehicle performance and longevity.	
				Day 5	Hour-1
		Hour-2	Prepare Work estimate Students will be able to prepare a cost estimate form based on diagnose result including:		

Schedu led Weeks	Module Title	Days	Hour	Learning Units	Home Assignm ent
				1. Labor cost 2. Parts cost 3. Sublet cost Prepare time estimate form based on diagnose result	
			Hour-3	Provide Feedback to Customer Students will be able to follow-up inquiries Respond to inquiries Provide feedback to customer.	
			Hour-4 to 5	Perform Post Service follow up with Customer Students will be able to fill up customer feedback form according to customer feedback Analyze results Suggest improvements in service based on customer feedback	
Week 12	Entrepreneurship Mid term exam in last two days	Day 1	Hour-1 to 2	Motivational Lecture (For further detail please see Page No: 32) <ul style="list-style-type: none"> Job Market Searching Self-employment Job Market Searching 	<ul style="list-style-type: none"> Task 61 <i>Details may be seen at Annexure-1</i>
			Hour-3 to 4	<ul style="list-style-type: none"> Introduction of Business Development Entrepreneurship Startup Funding 	
		Day 2	Hour-1 to 4	<ul style="list-style-type: none"> Business Value Statement Business Model Canvas Sales and Marketing Strategies How to Reach 	

Schedu led Weeks	Module Title	Days	Hour	Learning Units	Home Assignm ent	
				Customers and Engage CxOs		
		Day 3	Hour-1 to 4	Stakeholders Power Grid Cost Management (OPEX, CAPEX, etc.)		
		Day 4	Final Assessment			
		Day 5				

Tasks For Certificate in Hi-tech Automotive Junior Technician

Task No.	Task Description	Week	Detailed Description
1	Introduction to Automotive Technology	1	Prepare Overview of the automotive industry, including its history, current trends, and future developments.
2			Perform safety practices in the automotive workshop, including proper tool handling and equipment usage.
3	Automotive Electrical Systems	2	Build a Simple Series Circuit
4			Construct a Parallel Circuit
5			Build Diode Test Circuit
6			Perform Capacitor Charging and Discharging
7			Use Transistor as a Switch
8			Measure voltage using voltmeter
9			Measure current using ammeter
10			Measure resistance using ohm meter
11			Perform continuity test of the given circuit
12			Perform diode testing
13			Prepare Simple Electromagnet Circuit
14	Engine Basics	3	Inspect Distributor
15			Adjust the engine timing
16			Replace the air filter
17			Adjust the Valve clearance
18			Replace the engine oil & oil filter
19			Replace the oil pump
20	Fuel Systems	4	Replace fuel pump
21			Service carburetor
22			Inspect fuel injectors
23	Ignition Systems	5	Study spark plugs, ignition coils, distributor operation, and timing
24			Service Starter Motor
25			Test Ignition Control Module (ICM)
26	Drivetrain Systems	6	Gain knowledge about different types of transmissions and their operation.
27			Inspect levels of transmission oil
28			Perform service of clutch system
29			Inspect main drive shaft
30			Diagnosis and repair of common driveshaft issues (vibration, noise, etc.).
31			Balance and align driveshaft
32	Suspension and Steering Systems	7	Study the various types of suspension systems used in vehicles.
33			Perform wheel alignment
34			Perform wheel balancing
35			Perform service of suspension components
36	Brake Systems	8	Adjust brake paddle

Task No.	Task Description	Week	Detailed Description
37			Replace brake leathers/shoes
38			Perform brake master cylinder
39			Perform brake bleeding
40			Perform service of hydraulic brake
41	HVAC Systems	9	Explore heating, ventilation, and air conditioning (HVAC) principles in vehicles.
42			Perform leak test of HVAC system
43			Charge refrigerant in HVAC system
44	Advanced Engine Diagnostics	10	Perform ECM diagnostics using scanner
45			Retrieve diagnostics codes stored in vehicle computer system
46			Compare to manufacturer specifications
47			Set out of range parameter according to the manufacturers' specifications
48			Use scanner to diagnose engine faults
49	Hybrid and Electric Vehicle Technology	11	Diagnose Spark Issues
50			Inspect Wiring and Connections
51			Check Warning Lights of charging system
52			Disconnect the battery and remove interior panels to access the faulty component
53			Install new SRS component
54			Test and calibrate SRS component
55			Compare the calculated mechanical efficiency with the theoretical efficiency for the specific operating conditions
56			Make necessary adjustments to improve the engine's mechanical efficiency
57			Develop understanding of Health, hygiene and safety procedures/precautions
58	Handle Customer Complaints/Requirements		Learn about techniques and methods for cost estimation.
59			Learn about Personal Protective Equipment
60			Develop understanding of customer feedback and follow up
61	How to search and apply for jobs in at least two labor marketplace countries (KSA, UAE, etc.)	12	<ul style="list-style-type: none"> Browse the following website and create an account on each website <ul style="list-style-type: none"> i. Bayt.com – The Middle East Leading Job Site ii. Monster Gulf – The International Job Portal iii. Gulf Talent – Jobs in Dubai and the Middle East iv. Find the handy 'search' option at the top of your homepage to search for the jobs that best suit your skills. Select the job type from the first 'Job Type' drop-down menu, next, select the location from the second drop-down menu. Enter any keywords you want to use to find suitable job vacancies. On the results page you can search for part-time

Task No.	Task Description	Week	Detailed Description
			<p>jobs only, full-time jobs only, employers only, or agencies only. Tick the boxes as appropriate to your search.</p> <ul style="list-style-type: none"> • Search for jobs by: <ul style="list-style-type: none"> i. Company ii. Category iii. Location iv. All jobs v. Agency

**Motivational Lectures
Hi-Tech Automotive Junior Technician**

What Is the Role of Good Manners in the Workplace? By Qasim Ali Shah | In Urdu

<https://www.youtube.com/watch?v=Qi6Xn7yKlIQ>

Automotive Success Story - James Morris

<https://youtu.be/lhuh0UoUXb8>

Automotive Success Story - Pakistani Girl Ne Comfortable Rickshaw Bana Dia - Bari Company Ne Rickshaw Dekhte Hi Boli Laga Di

https://youtu.be/rM_JGTrrAYU

Automotive Success Story - This Automotive Technician is Proof That You Don't Have To Be Naturally Gifted To Be The Best

<https://youtu.be/tYGuyIUkCms>

Pakistani Engineer makes Solar Rikshaa - Gupshup with Nauman Epi-17 | Pakistanis in Saudi Arabia

<https://youtu.be/NVOqlo7W9lo>

How a normal mechanic become @Themechaniker |Legendary Mechanic @mukeshchandragond struggling story

<https://youtu.be/XQHsOMHeowg>

SUGGESTIVE FORMAT AND SEQUENCE ORDER OF MOTIVATIONAL LECTURE.

Mentor

Mentors are provided an observation checklist form to evaluate and share their observational feedback on how students within each team engage and collaborate in a learning environment. The checklist is provided at two different points: Once towards the end of the course. The checklists are an opportunity for mentors to share their unique perspective on group dynamics based on various team activities, gameplay sessions, pitch preparation, and other sessions, giving insights on the nature of communication and teamwork taking place and how both learning outcomes and the student experience can be improved in the future.

Session- 1 (Communication):

Please find below an overview of the activities taking place Session plan that will support your delivery and an overview of this session's activity.

Session- 1 OVERVIEW
Aims and Objectives:
<ul style="list-style-type: none"> • To introduce the communication skills and how it will work • Get to know mentor and team - build rapport and develop a strong sense of a team • Provide an introduction to communication skills • Team to collaborate on an activity sheet developing their communication, teamwork, and problem-solving • Gain an understanding of participants' own communication skills rating at the start of the program

Activity:	Participant Time	Teacher Time	Mentor Time
Intro Attend and contribute to the scheduled.			
Understand good communication skills and how it works.			
Understand what good communication skills mean			
Understand what skills are important for good communication skills			
Key learning outcomes:	Resources:		Enterprise skills developed:
<ul style="list-style-type: none"> • Understand the communication skills and how it works. • Understand what 	<ul style="list-style-type: none"> • Podium • Projector • Computer • Flip Chart • Marker 		<ul style="list-style-type: none"> • Communication • Self Confidence • Teamwork

<p>communication skills mean</p> <ul style="list-style-type: none"> • Understand what skills are important for communication skills 		
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Schedule	Mentor Should do
<p>Welcome: 5 min</p>	<p>Short welcome and ask the Mentor to introduce him/herself.</p> <p>Provide a brief welcome to the qualification for the class. Note for Instructor: Throughout this session, please monitor the session to ensure nothing inappropriate is being happened.</p>
<p>Icebreaker: 10 min</p>	<p>Start your session by delivering an icebreaker, this will enable you and your team to start to build rapport and create a team presentation for the tasks ahead.</p> <p>The icebreaker below should work well at introductions and encouraging communication, but feel free to use others if you think they are more appropriate. It is important to encourage young people to get to know each other and build strong team links during the first hour; this will help to increase their motivation and communication throughout the sessions.</p>
<p>Introduction & Onboarding: 20mins</p>	<p>Provide a brief introduction of the qualification to the class and play the “Onboarding Video or Presentation”.</p> <p>In your introduction cover the following:</p> <ol style="list-style-type: none"> 1. Explanation of the program and structure. (Kamyab jawan Program) 2. How you will use your communication skills in your professional life. 3. Key contacts and key information – e.g. role of teacher, mentor, and SEED. Policies and procedures (user agreements and “contact us” section). Everyone to go to the Group Rules tab at the top of their screen, read out the rules, and ask everyone to verbally agree. Ensure that the consequences are clear for using the platform outside of hours. (9am-8pm) 4. What is up next for the next 2 weeks ahead so young people know what to expect (see pages 5-7 for an overview of the challenge). Allow young people to ask any questions about the session topic.
<p>Team Activity Planning: 30 minutes</p>	<p>MENTOR: Explain to the whole team that you will now be planning how to collaborate for the first and second collaborative Team Activities that will take place outside of the session. There will not be another session until the next session so this step is required because communicating and making decisions outside of a session requires a different strategy that must be agreed upon so that everyone knows what they are doing for this activity and how.</p> <ul style="list-style-type: none"> • “IDENTIFY ENTREPRENEURS” TEAM

	<p style="text-align: center;">ACTIVITY</p> <ul style="list-style-type: none"> • “BRAINSTORMING SOCIAL PROBLEMS” TEAM ACTIVITY <p><i>As a team, collaborate on a creative brainstorm on social problems in your community. Vote on the areas you feel most passionate about as a team, then write down what change you would like to see happen.</i></p> <p>Make sure the teams have the opportunity to talk about how they want to work as a team through the activities e.g. when they want to complete the activities, how to communicate, the role of the project manager, etc.</p> <p>Make sure you allocate each young person a specific week that they are the project manager for the weekly activities and make a note of this.</p> <p>Type up notes for their strategy if this is helpful - it can be included underneath the Team Contract.</p>
<p>Session Close: 5 minutes</p>	<p>MENTOR: Close the session with the opportunity for anyone to ask any remaining questions.</p> <p>Instructor: Facilitate the wrap-up of the session. A quick reminder of what is coming up next and when the next session will be.</p>

MOTIVATIONAL LECTURES LINKS.

<u>TOPIC</u>	<u>SPEAKER</u>	<u>LINK</u>
How to Face Problems In Life	Qasim Ali Shah	https://www.youtube.com/watch?v=OrQte08MI90
Just Control Your Emotions	Qasim Ali Shah	https://www.youtube.com/watch?v=JzFs_yJt-w
How to Communicate Effectively	Qasim Ali Shah	https://www.youtube.com/watch?v=PhHAQEGehKc
Your ATTITUDE is Everything	Tony Robbins Les Brown David Goggins Jocko Willink Wayne Dyer Eckart Tolle	https://www.youtube.com/watch?v=5fS3rj6eIFg
Control Your EMOTIONS	Jim Rohn Les Brown TD Jakes Tony Robbins	https://www.youtube.com/watch?v=chn86sH0O5U
Defeat Fear, Build Confidence	Shaykh Atif Ahmed	https://www.youtube.com/watch?v=s10dzfbozd4
Wisdom of the Eagle	Learn Kurooji	https://www.youtube.com/watch?v=bEU7V5rJTtw
The Power of ATTITUDE	Titan Man	https://www.youtube.com/watch?v=r8LJ5X2eigU
STOP WASTING TIME	Arnold Schwarzenegger	https://www.youtube.com/watch?v=kzSBrJmXqdq
Risk of Success	Denzel Washington	https://www.youtube.com/watch?v=tbnzAVRZ9Xc

Suggestive Format and Sequence Order of Success Story

S. No	Key Information	Detail/Description
1.	Self & Family background	<p>Since picking up a wrench as one of the first female car mechanics in conservative Pakistan, Uzma Nawaz has faced two common reactions: shock and surprise. And then a bit of respect.</p> <p>The 24-year-old spent years overcoming entrenched gender stereotypes and financial hurdles enroute to earning an automotive technician certificate and netting a job with an auto repairs garage in the eastern city of Multan.</p> <p><i>"I took it up as a challenge against all odds and the meagre financial resources of my family,"</i> says Uzma.</p> <p><i>"When they see me doing this type of work they are really surprised."</i></p> <p>But Nawaz's drive and expertise has impressed colleagues, who say she can more than hold her own.</p>  <p><i>"Whatever task we give her she does it like a man with hard work and dedication,"</i> said coworker M. Attaullah.</p> <p>She has also convinced some of those who doubted her ability to make it in a male-dominated work environment, including members of her own family.</p> <p><i>"There is no need in our society for girls to work at workshops, it doesn't seem nice, but it is her passion,"</i> said her father Muhammad Nawaz.</p> 

2.	How he came on board NAVTTC Training/ or got trained through any other source	N/A
3.	Post-training activities	<p>Uzma Nawaz started the career as an automotive mechanic from a small repairs garage in Multan. She moved to Toyota dealership in Multan through her sheer hard work and dedication. She had no eager financial resources, hence against all odds despite of being a female, she took the extremely hardcore job of an automotive mechanic.</p> <p>Hailing from the small, impoverished town of Dunyapur in eastern Pakistan's Punjab province, Uzma Nawaz relied on scholarships and often skipped meals when she was broke while pursuing her education. Her achievements are rare.</p> <p>Women are often encouraged to marry young and devote themselves entirely to family over career. <i>"No hardship could break my will and motivation," she says proudly.</i></p> <p>The sacrifices cleared the way for steady work at a Toyota dealership in Multan.</p> <p>Just a year into the job, and promoted to general repairs, Nawaz moves with the ease of a seasoned pro around the dealership's garage, removing tyres from raised vehicles, inspecting engines and handling a variety of tools — a sight that initially jolted some customers.</p> <p><i>"I was shocked to see a young girl lifting heavy spare tyres and then putting them back on vehicles after repairs,"</i> a customer Arshad Ahmad mentioned about Uzma.</p>
4.	Message to others (under training)	<ul style="list-style-type: none"> • Take the training opportunity seriously • Impose self-discipline and ensure regularity • Make Hard work pays in the end so be always ready for the same. • So if Uzma Nawaz, a young girl can do it, why can't you?

Note: Success story is a source of motivation for the trainees and can be presented in several ways/forms in a NAVTTC skill development course as under: -

1. To call a passed out successful trainee of the institute. He will narrate his success story to the trainees in his own words and meet trainees as well.
2. To see and listen to a recorded video/clip (5 to 7 minutes) showing a successful trainee Audio-video recording that has to cover the above-mentioned points.*

3. The teacher displays the picture of a successful trainee (name, trade, institute, organization, job, earning, etc) and narrates his/her story in the teacher's own motivational words.

* *The online success stories of renowned professional can also be obtained from **Annex-II***

Workplace/Institute Ethics Guide

Work ethic is a standard of conduct and values for job performance. The modern definition of what constitutes good work ethics often varies. Different businesses have different expectations. Work ethic is a belief that hard work and diligence have a moral benefit and an inherent ability, virtue, or value to strengthen character and individual abilities. It is a set of values-centered on the importance of work and manifested by determination or desire to work hard.

The following ten work ethics are defined as essential for student success:

1. Attendance:

Be at work every day possible, plan your absences don't abuse leave time. Be punctual every day.

2. Character:

Honesty is the single most important factor having a direct bearing on the final success of an individual, corporation, or product. Complete assigned tasks correctly and promptly. Look to improve your skills.

3. Team Work:

The ability to get along with others including those you don't necessarily like. The ability to carry your weight and help others who are struggling. Recognize when to speak up with an idea and when to compromise by blend ideas together.

4. Appearance:

Dress for success set your best foot forward, personal hygiene, good manner, remember that the first impression of who you are can last a lifetime

5. Attitude:

Listen to suggestions and be positive, accept responsibility. If you make a mistake, admit it. Values workplace safety rules and precautions for personal and co-worker safety. Avoids unnecessary risks. Willing to learn new processes, systems, and procedures in light of changing responsibilities.

6. Productivity:

Do the work correctly, quality and timelines are prized. Get along with fellows, cooperation is the key to productivity. Help out whenever asked, do extra without being asked. Take pride in your work, do things the best you know-how. Eagerly focuses energy on accomplishing tasks, also referred to as demonstrating ownership. Takes pride in work.

7. Organizational Skills:

Make an effort to improve, learn ways to better yourself. Time management; utilize time and resources to get the most out of both. Take an appropriate approach to social interactions at work. Maintains focus on work responsibilities.

8. Communication:

Written communication, being able to correctly write reports and memos.
Verbal communications, being able to communicate one on one or to a group.

9. Cooperation:

Follow institute rules and regulations, learn and follow expectations. Get along with fellows, cooperation is the key to productivity. Able to welcome and adapt to changing work situations and the application of new or different skills.

10. Respect:

Work hard, work to the best of your ability. Carry out orders, do what's asked the first time. Show respect, accept, and acknowledge an individual's talents and knowledge. Respects diversity in the workplace, including showing due respect for different perspectives, opinions, and suggestions.

Home Assignment

Designing Effective Homework

To achieve a positive impact on student learning, homework assignments must be well- designed and carefully constructed. Some specific research findings include:

- ▶ Homework is most effective when it covers material already taught.
- ▶ Homework is most effective when it is used to reinforce skills learned in previous weeks or months.
- ▶ Homework is less effective if it is used to teach complex skills.

Characteristics of Good Assignments

When teachers plan homework, they should consider the characteristics listed below:

- ▶ Provide clear instructions for students;
- ▶ Can be completed successfully;
- ▶ Are not too long;
- ▶ Can be completed within a flexible time frame;
- ▶ Use information and materials that are readily available;
- ▶ Reinforce and allow practice of previously taught skills;
- ▶ Must not be unfinished class work;
- ▶ Are interesting to students and lead to further exploration and study;
- ▶ Stimulate creativity and imagination in the application of skills;
- ▶ Stimulate home and class discussion

Homework Don'ts

Do not assign homework that:

- ▶ Is unfamiliar, boring or impossible to do
- ▶ Requires complex skills or requires unreasonable time frames
- ▶ Is a “time filler” to keep students busy or a punishment for not doing class work
- ▶ Do not wait until the last minute to organize and assign the *homework (You may give useless or impossible tasks and/or giving inadequate directions)*
- ▶ Do not assume that all homes have equal resources, that all parents have equal skills and talents to support their children as learners
- ▶ Do not collect any homework you do not intend to check, review or grade.
- ▶ Do not assign homework that is so difficult and unfamiliar to students that their parents are tempted to:
 - Do the work for them;
 - Accuse their children of being inattentive in class; or
 - Accuse their children of failing

References

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7. Automotive Service: Inspection, Maintenance, Repair" by Tim Gilles
8. Today's Technician: Automotive Electricity and Electronics" by Barry Hollembeak
9. National Automotive Technicians Education Foundation (NATEF):
Website: <https://www.natef.org/>
10. Automotive Training Center:
Website: <https://www.autotraining.edu/>
11. Automotive Service Excellence (ASE):
Website: <https://www.ase.com/>
12. iATN (International Automotive Technicians Network):
Website: <https://www.iatn.net/>
13. Automotive Technology Online:
Website: <https://www.automotivetechonline.com/>
14. Auto Mechanic Schools:
Website: <https://www.automechanicschools.com/>