

Government of Pakistan

National Vocational and Technical Training Commission

Prime Minister's Hunarmand Pakistan Program

"Skills for All"



Course Contents / Lesson Plan

Course Title: Intelligent Hybrid & Electric Vehicles

Duration: 3 Months

Revised Edition

Trainer Name	
Course Title	Intelligent Hybrid & Electric Vehicles
Objectives and Expectations	<p>Employable skills and hands-on practice in Graphic Designing and video editing</p> <p>This course offers a broad, cross-disciplinary learning experience for students looking to pursue careers in Advertising Intelligent Hybrid & Electric Vehicles, to name a few — all disciplines that focus on effective and arresting visual communication. The course is designed to span a wide range of visual communication in a digital platform.</p> <p>In this course, students are introduced to key aspects of the design process, from research/strategy, creative brief development, and campaign development to teamwork and presentation and content creation so that they can enter the design market as strong candidates for beginner to intermediate level design jobs.</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>This course thus clearly goes beyond the domain of the traditional training practices in vogue and underscores an expectation that a market-centric approach will be adopted as the main driving force while delivering it. 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"> <li data-bbox="403 1283 1492 1570">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. <li data-bbox="403 1574 1492 1975">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 industrial accidents must be arranged by the training institute)

	iii. Field visits(At least one visit to a trade-specific major industry/ site must be arranged by the training institute)
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> <ul style="list-style-type: none"> • Communicate ideas through mechanical work by selecting and applying techniques and processes, subject matter, and criteria • Demonstrate a verbal-working use of the vocabulary relating to course • Develop an understanding of the properties and the preparation of Intelligent Hybrid & Electric Vehicles • Respond aesthetically to artworks based upon their personal experience and cultural values • Analyze, interpret, and evaluate the quality of artwork • Understand the role and functions of art in history and culture • Students will produce a portfolio of art using a variety of Intelligent Hybrid & Electric Vehicles.
Course Execution Plan	<p>The total duration of the course: 6 months (26 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. PakWheels 2. Changan Pakistan 3. MG Motors 4. Suzuki Motors 5. Toyota 6. Honda 7. Nissan 8. BMW 9. Dewan Motors 10. Mercedes 11. Haval 12. Chines motors 13. Jolta EV 14. olx
Job Opportunities	<p>Intelligent Hybrid & Electric Vehicles, also known as future high updated vehicles is recognized across the world as the leader. Intelligent Hybrid & Electric Vehicles thus hold a high rate of employability in various capacities across various industries. Energy management in these vehicles is highly sensitive for upcoming design of the EVs and advancement in cheap sensing and computation will be challenged to provide better efficiency systems that can be adapted to a wide variety of different types of batteries and vehicles with vastly diver requirements:</p> <ul style="list-style-type: none"> • Battery Configurations • Diagnostic by computer for vehicles

	<ul style="list-style-type: none"> • Types of Batteries for HEV and EV • Functional Blocks of BMS • IoT-Based Battery Monitoring System • BLDC Motor Speed Controller With ANN-Based PID Controller • ANN-Based on PID Controller • Active Magnetic Bearing in Electric Vehicles System
No of Students	25
Learning Place	Classroom / Lab
Instructional Resources	<p>G. Dubey, Power Semiconductor Controlled Drives, Prentice Hall, Englewood Cliffs, NJ, 1989.</p> <p>R.H. Park, Two-reaction theory of synchronous machines—Generalized method of analysis—Part I, AIEE Transactions, 48, 716–727, July 1929.</p> <p>P. Vas, Electric Machines and Drives: A Space-Vector Theory Approach, Oxford University Press, Oxford, U.K., 1992</p> <p>M.N. Anwar, I. Husain, and A.V. Radun, A comprehensive design methodology for switched reluctance machines, IEEE Transactions on Industry Applications, 37(6), 1684–1692, November–December 2001.</p> <p>Ehsani M., Rahman K., & Toliyat H. (1997). Propulsion system design of electric and hybrid vehicles. IEEE Transactions on Industrial Electronics, Vol. 44 No. 1, February 1997.</p> <p>Ehsani M., Yimin G., Gay S. E., & Emadi A. (2004). Modern Electric, Hybrid Electric, and Fuel Cell Vehicles: Fundamentals, theory and design, CRC Press, 2004.</p> <p>Elinta Motors. Electric vehicles manufacturer. Available at: http://www.elintamotors.com/Electric-vehicles/iphev</p> <p>Ma, C. & Song, M. & Ji, J. & Park, J. & Ko, S. & Kim, H. Comparative study on power characteristics and control strategies for plug-in HEV.</p> <p>Vehicle Power and Propulsion Conference. 2011. Available at: http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=6043156 .</p> <p>Lintern, M.A. & Chen, R. & Carroll, S. & Walsh, C. Simulation study on the measured difference in fuel consumption between real-world driving and ECE-15 of a hybrid electric vehicle. In: Proceedings of Hybrid and Electric Vehicles Conference. 2013. Available at: http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=6728838</p> <p>Calb Europe. LiFePO4 battery manufacturer. Available at: http://en.calb.cn/product/show/?id=630</p> <p>Wang, X. & Adelman, P. & Reindl, T. Use of LiFePO4 Batteries in Stand-Alone Solar System. Energy Procedia, Vol. 25. 2012. P. 135-140.</p>

Schedu led Weeks	Module Title	Days	Learning Units	Home Assignment
Week 1	INTRODUCTIO N	Day 1	<p>Motivational Lecture</p> <p>Course Introduction</p> <p>Job market</p>	<ul style="list-style-type: none"> • Task 1 • Task 2 • Task 3 • Task 4 • Task 5
		Day 2	<p>Course Applications</p> <p>Institute/work ethics</p> <p>the immense professional opportunities it provides</p> <p>Survey career opportunities</p>	

	<p>Prepare Basic Electric Circuits</p>	<p>Day 3</p>	<p>P-1. Prepare series circuit on work bench using appropriate tools.</p> <p>P-2. Prepare parallel circuit on work bench using appropriate tools.</p> <p>P-3. Prepare series parallel circuit on work bench using appropriate tools.</p> <p>P-4. Prepare Head and Tail Light Circuit on work bench using appropriate tools.</p> <p>P-5. Prepare indicator circuit on work bench using appropriate tools.</p> <p>P-6. Prepare brake light circuit on work bench using appropriate tools.</p>	
	<p>Perform Basic Electrical Measurement</p>	<p>Day 4</p>	<p>P-1. Measure/ record voltage by using Digital Multi METER (DMM)</p> <p>P-2. Measure/ record current by using Digital Multi Meter (DMM)</p>	

	Perform Basic Electrical Measurement	Day 5	<p>P-3. Measure/ record resistance by using Digital Multi Meter.</p> <p>P-4. Measure/ record continuity by using Digital Multi Meter.</p>	
Week 2	Perform Basic Electrical Measurement	Day 1	<p>P-1. Measure/ record voltage by using Digital Multi METER (DMM)</p> <p>P-2. Measure/ record current by using Digital Multi Meter (DMM)</p> <p>P-3. Measure/ record resistance by using Digital Multi Meter.</p> <p>P-4. Measure/ record continuity by using Digital Multi Meter</p>	<ul style="list-style-type: none"> • Task 6 • Task 7 • Task 8
	Prepare basic Electromagnetic circuits.	Day 2	P-1. Prepare basic electromagnet with the help of iron core and copper wire.	
	Prepare basic Electromagnetic circuits.	Day 3	<p>P-2. Prepare horn circuit on work bench using appropriate tools.</p> <p>P-3. Prepare self-starter circuit on work bench using appropriate tools.</p>	

	Basic Electromagnetic circuits Measurement	Day 4	<p>P-1. Test winding resistance of DC motor by using Digital Multi Meter</p> <p>P-2. Test Relay function by switching relay coil points and measure / record continuity between contact points by using Digital Multi Meter</p>	
		Day 5	P-3. Measure/ record voltage drop during self-starter cranking by using Digital Multi Meter.	
Week 3	Perform Service of Battery	Day 1	<p>P-1. Perform the battery test by use of hydrometer, Clean Terminals, tight and insulate, secure with battery holder as per given specification.</p> <p>P-2. Inspect and change the Ground (Earth) cable from the vehicle body.</p>	<ul style="list-style-type: none"> • Task 9 • Task 10 • Task 11

	<p>Perform Battery Replacement</p>	<p>Day 2</p>	<p>P-2. Inspect and change the Ground (Earth) cable from the vehicle body</p> <p>P-3. Test battery by using the load tester/battery tester and assess the battery performance.</p>	
	<p>Perform Battery replacement</p>	<p>Day 3</p>	<p>P-1. Perform Safe removal and installation of Battery from the vehicle Inspect/service the battery and assess safety fitting and correctness under specified procedure.</p> <p>P-2. Carry out safe procedure to charge the battery using an external charger.</p>	

	Repair starting system	Day 4	<p>P-1. Inspect the vehicle starting system and troubleshoot the following:</p> <p>Low cranking speed/ not cranking, Ignition switch operation malfunctioning.</p>	
	Repair starting system	Day 5	<p>P-2. Inspect the vehicle starting system and troubleshoot the following:</p> <p>Unusual noise during operation, corrosive battery terminals, safety neutral switch, incorrect pinion engagement/ disengagement, blown fuse/ relay, lose/ corroded main starting wire.</p>	

Week 4	Service Starter Motor	Day 1	<p>P-1. Carryout safe procedure to replace the starter motor from the vehicle.</p> <p>P-2. Service/replace components of starter motor and perform bench testing.</p>	<ul style="list-style-type: none"> • Task 12 • Task 13 • Task 14
	Repair Ignition System	Day 2	<p>P-1. Follow safe working procedure.</p> <p>P-2. Inspect vehicle Ignition system and diagnose the following:</p> <p>Crank engine and test presence of spark in a system, identify faulty fuse in fuse box.</p> <p>P-3. Inspect vehicle Ignition system.</p>	

Repair charging system	Day 3	<p>P-4. Test performance of plug cable (high tension leads) and plugs.</p> <p>P-5. Inspect distributor cap/rotor for performance, assess correct ignition timing.</p> <p>P-6. Inspect vacuum advancer, assess C.B. Point condition/gap and test condenser.</p>
	Day 4	<p>P-1. Inspect vehicle charging system and diagnose the following. Battery warning light indication on instrument panel.</p> <p>P-2. Test output voltage of alternator.</p> <p>P-3. Test drives belt condition and Tension, alternator bearing noise.</p> <p>P-4. Test wire harness, fuse, and proper insulated wires.</p>
	Day 5	<p>P-5. Dismantle/service of alternator as following; Repair connector, replace carbon brushes, Replace Rectifier Bridge, replace voltage regulator and replace stator winding.</p>

Week 5	Replace alternator	Day 1	<p>P-1. Perform safe working practice to remove the alternator from the vehicle and refit under the specified procedure.</p> <p>P-2. Perform test of alternator to confirm the operation on test bench.</p>	<ul style="list-style-type: none"> • Task 5 • Task 16 <i><u>Details may be seen at Annexure-1</u></i>
	Repair Electrical Accessories	Day 2	<p>P-1. Inspects the oil warning switch operation for correct operation under specified testing instructions.</p> <p>P-2. Inspects fuse, relay operation for correct operation under specified testing instructions.</p> <p>P-3. Inspects the fuel sender operation for correct operation under specified testing instructions.</p> <p>P-4. Inspects the wiper motor, washer motor for correct operation under specified testing instructions.</p> <p>P-5. Inspects heating Elements for correct operation under specified testing instructions.</p>	
	Draw Different Forms of Drawing	Day 3	<p>P-1. Draw convention layout drawing</p> <p>P-2. Draw convention electrical circuit drawing</p>	

	Draw different lines for free hand sketching	Day 4	<p>P-3. Draw lines with different scale of measurement</p> <p>P-4. Select the sheet format</p> <p>P-5. Select the tool and equipment</p>	
		Day 5	<p>P-1. Draw horizontal lines</p> <p>P-2. Draw vertical lines</p> <p>P-3. Draw arcs</p> <p>P-4. Draw circles</p> <p>P-5. Draw ellipse</p> <p>P-6. Draw all conic section</p> <p>P-7. Draw projection of lines</p> <p>P-8. Sketch different objects</p>	
Week 6	Draw different lines with measurement	Day 1	<p>P-1. Draw single Stroke lettering</p> <p>P-2. Draw double stroke gothic letter</p> <p>P-3. Draw different types of letter</p>	

	<p>Draw different types of pictorial drawing</p>	<p>Day 2</p>	<p>P-4. Draw alphabet of lines in original scale</p> <p>P-5. Apply alphabet of lines in drafting</p>	
		<p>Day 3</p>	<p>P-1. Draw oblique drawing</p> <p>P-2. Draw axonometric drawing</p> <p>P-3. Draw perspective drawing</p> <p>P-4. Draw Multi view drawing</p>	
	<p>Draw multi view projection</p>	<p>Day 4</p>	<p>P-1. Draw principle plane of projection</p> <p>P-2. Draw projector / projection lines</p> <p>P-3. Draw auxiliary view of objects</p> <p>P-4. Draw Multi view drawing of machine components</p>	

	Draw dimensional geometrical constructions	Day 5	<p>P-1. Draw the types of dimensioning (size of dimension and location of dimension)</p> <p>P-2. Draw system of dimensioning</p> <p>P-3. Draw dimensioning of holes</p> <p>P-4. Draw dimensioning of arc</p>	
Week 7	Draw dimensional geometrical constructions	Day 1	<p>P-5. Draw dimensioning circles</p> <p>P-6. Draw dimensioning of angles</p> <p>P-7. Draw all conic sections separately</p> <p>P-8. Draw engineering involute curve of a circle</p>	•Task 7
	Draw working Drawing	Day 2	<p>P-1. Draw preliminary designee sketching</p> <p>P-2. Draw detail Drawing of an object</p> <p>P-3. Draw Assembly Drawing of an object</p> <p>P-4. Draw working drawing of machine component</p>	

	Draw true length Line	Day 3	<p>P-1. Draw true length line in auxiliary view of different objects</p> <p>P-2. Draw auxiliary view in different objects</p> <p>P-3. Draw auxiliary view of objects</p> <p>P-4. Draw auxiliary view of component part</p> <p>P-5. Draw example of above two</p>	
	Pre alignments Checks	Day 4	<p>P-1. Check for the vehicle pre alignment for proper Tire pressure/inflation, and axle bushes under specified procedure.</p> <p>P-2. Check for the vehicle pre alignment for loose ball joints, wheel bearings, and tie road ends under specified procedure.</p> <p>P-3. Check for the vehicle pre alignment for faulty spring, tire deformation, and vehicle ride height under specified procedure.</p> <p>P-4. Check for the vehicle pre alignment for loose stabilizer bar under specified procedure.</p>	

	Perform wheel alignment	Day 5	<p>P-1. Drive the vehicle and load/offload it on wheel alignment machine following safety rules as specified in the manual.</p> <p>P-2. Perform wheel alignment using the wheel alignment machine as described procedure in the machine manual and adjust Toe, camber of front and rear wheels under specified procedure.</p>	
Week 8	Perform wheel Balancing	Day 1	<p>P-1. Use the wheel balancing machine and balance the wheel as described in the machine manual under the specified procedure.</p> <p>P-2. Keep the weights firmly with the rim</p> <p>P-3. Perform wheel balancing on allow rim under the specified procedure</p>	I
	Check the Supplementarily Restrain System (SRS)	Day 2	<p>P-1. Check for vehicle SRS sensor under the specified procedure.</p> <p>P-2. Check for the vehicle SRS wiring under the specified procedure.</p>	

	<p>Installation of new Supplementarily Restrain System (SRS)</p>	<p>Day 3</p>	<p>P-1. Reinstall the SRS spiral cable under the specified procedure.</p> <p>P-2. Start the vehicle and confirm the malfunctioning light is removed.</p>	
	<p>Demonstrate Common Hand Tools</p>	<p>Day 4</p>	<p>P-1. Demonstrate use of general hand tools under specified instructions and keep in secure location.</p> <p>P-2. Demonstrate service of general hand tools under specified instructions and keep in secure location.</p>	

	Perform 5s at Workplace	Day 5	P-1. Demonstrate tools 5s (Sort, Set In Order, Shine, Standardize, Sustain)	
Week 9	Carry Out Measurements with Automotive Measuring Tools: Demonstrate Measuring tools	Day 1	P-1. Demonstrate service of measuring tools under specified instructions and keep in secure location. P-2. Demonstrate use of measuring tools under specified instructions and keep in secure location.	<ul style="list-style-type: none"> • Task 29 • Task 30 <u>Details may be seen at Annexure-I</u>
		Day 2	P-1. Demonstrate measuring tools 5s (Sort, Set In Order, Shine, Standardize, Sustain)	
	Perform 5s at Workplace			

	Perform Test on Vehicle with Automotive Workshop Equipment: Demonstrate Workshop Equipment	Day 3	P-1. Demonstrate of workshop equipment under specified instructions and keep in secure location. P-2. Demonstrate use of workshop equipment under specified instructions and keep in secure location	
		Day 4	P-1. Demonstrate of workshop equipment under specified instructions and keep in secure location. P-2. Demonstrate use of workshop equipment under specified instructions and keep in secure location	
	Perform 5s at workplace	Day 5	P-1. Demonstrate equipment 5s (Sort, Set In Order, Shine, Standardize, Sustain)	

Week 10	Diagnose Faults by Computerized Performance Testing Equipment: Perform Mechanical Efficiency Test by Engine Testing Equipment.	Day 1	P-1. Use of compression tester in the engine to diagnose condition of valve under the specified procedure P-2. Use of compression tester in the engine to diagnose condition of piston rings under the specified procedure.	•Task 31 <i><u>Details may be seen at Annexure-I</u></i>
		Day 2	P-3. Use of vacuum tester to identify the intake manifold pressure to diagnose the engine condition.	
		Day 3	P-4. Use of engine leak tester in the engine to diagnose condition of valve, piston ring, and head gasket under the specified procedure	

		Day 4	P-5. Clean and service the equipment and place on safe location.	
		Day 5	Assessment / Summarized / Practice all Performance of Mechanical Efficiency Test by Engine Testing Equipment.	
Week 11	Perform Electronic Efficiency Test by Engine testing Equipment.	Day 1	P-1. Use of timing gun in the engine to identify correct engine timing under the specified procedure.	

	<p>Categorize Automotive Fasteners Types and their Uses:</p> <p>Identify Fastener by their Types</p> <p>Carry out Fastening</p>	<p>Day 2</p>	<p>P-2. Use of tachometer in the engine to identify correct engine RPM under the specified procedure</p>	
<p>Day 3</p>		<p>P-1. Inspect and understand the Types of permanents Fasteners. P-2. Inspect and understand the Types of Temporary Fasteners.</p>		
<p>Day 4</p>		<p>P-1. Perform application of permanents fasteners P-2. Perform application of Temporary fasteners</p>		

		Day 5	Assessment / Summarized / Practice all Performance of Mechanical Efficiency Test by Engine Testing Equipment.	
Week 12	Read and Interpret Quality Control Standards and Certification: Describe Quality Control Standards Describe Quality Control Certification	Day 1	P-1. Elaborate the quality control standards P-2. Describe the quality control standard Application	
		Day 2	P-1. Elaborate the quality control certification P-2. Describe the quality control certification Application	
		Day 3	P-1. Use the appropriate personal protective equipment before starting the job to ensure the implementation of safety and health regulations. P-2. Identify the workshop associated hazards that can cause injury, burn, pinch, short circuit, and damages.	
	Plan and Organize Safe Workshop and Hazard Prevention Practices: Safe Working Practice			

	Fire, Preventions and Emergency		<p>P-3. Report to the supervision to analyze potential level of hazards that can cause damage.</p> <p>P-4. Demonstrate first aid procedure in case of minor injury and burn</p>	
Day 4		<p>P-1. Extinguish the different kind of fires using the appropriate equipment and procedures.</p> <p>P-2. Identify the expiry date, filing level of fire extinguishers and report to the supervision.</p> <p>P-3. Demonstrate the Emergency situations and perform safe evacuations drill.</p>		
Day 5		<p>Assessment / Summarized / Practice all Performance of Mechanical Efficiency Test by Engine Testing Equipment.</p>		

MODULES
Tasks For Intelligent Hybrid & Electric Vehicles

Task No.	Task	Description	Week
1.			Week 1
2.			
3.			
4.			
5.			
6.			Week 2
7.			
8.			
9.			Week 3
10.			
11.			
12.			Week 4
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15.			Week 5
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17.			Week 6
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26.			Week 7
27.			
28.			
29.			Week 8
30.			
31.			Week 9
32.			Week10
33.			Week11
34.			
35.			Week12
36.			Week13
37.			Week14
38.			Week15

**Motivational Lectures
Intelligent Hybrid & Electric Vehicles**

What is freelancing and how you can make money online - BBCURDU

<https://www.youtube.com/watch?v=9jCJN3Ff0kA>

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

<https://www.youtube.com/watch?v=Qi6Xn7yKIIQ>

Hisham Sarwar Motivational Story | Pakistani Freelancer

https://www.youtube.com/watch?v=CHm_BH7xAXk

21 Yr Old Pakistani Fiverr Millionaire | 25-35 Lakhs a Month Income | Interview

<https://www.youtube.com/watch?v=9WrmYYhr7S0>

Success Story of a 23 Year - Old SEO Expert | How This Business Works | Urdu Hindi Punjabi

<https://www.youtube.com/watch?v=tIQ0CWgszI0>

Failure to Millionaire - How to Make Money Online | Fiverr Superhero Aaliyaan Success Story

<https://www.youtube.com/watch?v=d1hocXWSpus>

Annexure-II

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 communication skills mean 	<ul style="list-style-type: none"> Podium Projector Computer Flip Chart Marker 		<ul style="list-style-type: none"> Communication Self Confidence Teamwork

<ul style="list-style-type: none"> • Understand what skills are important for communication skills 		
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Schedule	Mentor Should do
Welcome: 5 min	Short welcome and ask the Mentor to introduce him/herself. 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.
Icebreaker: 10 min	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. 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.
Introduction & Onboarding: 20mins	Provide a brief introduction of the qualification to the class and play the “Onboarding Video or Presentation”. In your introduction cover the following: <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.
Team Activity Planning: 30 minutes	<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 ACTIVITY • “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</p>

	<p>to complete the activities, how to communicate, the role of the project manager, etc. 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_vJt-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=kzSBrJmXqdg
Risk of Success	Denzel Washington	https://www.youtube.com/watch?v=tbnzAVRZ9Xc

SUCCESS STORY

S. No	Key Information	Detail/Description
1.	Self & Family background	<p><NAME>, who lives in Karachi (Sindh), is an example of how hard work and perseverance can reap rich rewards when bidding for projects online.</p> <p>The graphic designer works exclusively on an online freelancing platform and has earned, on average, US\$20,000 per month for the past several months. But this isn't a story of overnight success – Danyal has had to work hard to differentiate himself and stay true to his goal.</p> <p>It was a full year later, in May 2017, when Danyal finally decided to jump in. He signed up for one of the numerous sites that connect designers or coders with people or companies that have small projects, like designing a logo or building a website.</p> <p>He had already started a small business to help pay for his college education, so he was nervous and apprehensive about the decision. “I gave myself two or three months at most. If I didn't succeed, then I would go back to running the business as it was showing potential,” he says.</p> <p>If at first, you don't succeed, try try again</p>
2.	How he came on board NAVTTC Training/ or got trained through any other source	Certification in graphic designing from STEPS(NAVTTC partner institute)
3.	Post-training activities	<p>Danyal's area of expertise is in graphic design. In his first month using Fiverr, he pitched mostly for projects centered around logo designing. But it wasn't so simple. In the first few weeks, he didn't hear back from even a single client, despite pitching for dozens of projects.</p> <p>“I needed to understand what worked, so I read blogs, participated in forums, and analyzed profiles of successful freelancers. It was an uphill struggle, but I didn't want to give up,” he explains.</p> <p>Danyal says he understands why clients would be apprehensive giving projects to untested freelancers.</p>

		<p>They have hundreds of options to choose from, he explains, and to give a project to someone with no experience requires a strong leap of faith.</p> <p>A slow stream of projects started to come Danyal's way. Within a few months, he was landing an average of a hundred projects every month, with a large number of repeat clients. He also expanded the range of his professional services, branching out from logo design to business cards, banners, Facebook cover pages, letterheads, and stationery.</p> <p>But he's had to face his fair share of challenges too. The shoddy state of internet infrastructure in his city, Mirpur, threatened to derail his freelancing career. "Sometimes I haven't had connectivity for two days straight," he explains. "That's unthinkable for someone who makes his livelihood on the internet."</p>
4.	<p>Message to others (under training)</p>	<p>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.</p>

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.