

INDUSTRIAL TRAINING INSTITUTE

CRAFTSMEN TRAINING SCHEME (CTS)

ANNUAL INSTRUCTIONAL PLAN BREAKUP (42 WEEKS) WELDER TRADE (1-YEAR DURATION)

(Curriculum as per DGT / CSTARI Guidelines for Welder CTS Scheme)

Trade Name	WELDER (Engineering Trade)
NSQF Level & Duration	NSQF Level-2.5 One Year Duration (42 Weeks)
Academic Session	2026 - 2027
Instructor Name & Designation	
Group Instructor (GI) Name	
Principal / Superintendent Name	
Institute Name & Address	

Week No.	Professional Skills (Trade Practical)	Professional Knowledge (Trade Theory)
WEEK 01	Safety & Workshop Induction: 1. Demonstration of machinery used in the trade. 2. Identification of safety equipment and their use etc. 3. Hacksawing, filing square to dimensions. 4. Marking out on MS plate and punching.	Safety Induction & Trade Intro: 1. Importance of trade training, general discipline in the institute. 2. Elementary first aid, importance of welding in industry. 3. Introduction to SMAW and OAW equipment, tools and accessories. 4. Terms and definitions of SMAW and OAW, safety precautions in arc/gas welding and cutting.
WEEK 02	OAW Flame Setting & Arc Striking: 5. Setting of oxy-acetylene equipment, lighting and setting of flame (Neutral, Oxidising, Carburising). 6. Performing fusion runs without filler rod on MS sheet 2 mm thick in flat position (OAW-01). 7. Setting up of SMAW machine & accessories and striking an arc (SMAW-01). 8. Deposit straight line bead on MS plate in flat position.	Metal Joining & Arc Welding Basics: 5. Metal joining methods: bolting, riveting, soldering, brazing, seaming. 6. Classification of welding processes and industrial applications. 7. Basic types of welding joints, edge preparation, fit-up and surface cleaning. 8. Basic electricity applicable to arc welding: AC/DC, open circuit voltage (OCV), arc voltage.
WEEK 03	OAW Edge Joints & SMAW Beads: 9. Edge joint on MS sheet 2 mm thick in flat position without filler rod (OAW-02). 10. Depositing bead with filler rod on MS sheet 2 mm thick in flat position (OAW-03). 11. Perform straight line beads on MS plate 10 mm thick in flat position (SMAW-02). 12. Perform weaved bead on MS plate 10 mm thick in flat position (SMAW-03).	Arc Characteristics & Heat Dynamics: 9. Heat and temperature terms related to welding. 10. Principle of arc welding, arc characteristics, arc stability. 11. Striking arc methods: touch-and-lift (scratching) and tapping methods.
WEEK 04	Oxy-Acetylene Gas Cutting (OAGC): 13. Setting up of oxy-acetylene gas cutting plant (OAGC-01). 14. Make straight cuts (freehand) (OAGC-02). 15. Mark and straight line cut of MS plate 10 mm thick by gas cutting (accuracy within ± 2 mm). 16. Bevel MS plates 10 mm thick, cutting regular and irregular shapes, chamfering (OAGC-03).	Gas Cutting Principles: 12. Common gases used for gas welding and cutting (Oxygen, Acetylene, LPG). 13. Oxy-acetylene cutting process: principle, cutting torch, cutting nozzles, preheating and cutting oxygen streams. 14. Cutting parameters, fuel gas pressures, cutting speeds.
WEEK 05	Profile Gas Cutting & Cut Inspection: 17. Mark and perform radial cuts, cutting out circular holes using oxy-acetylene gas cutting (OAGC-04). 18. Identify cutting defects: distortion, grooved cuts, ragged cuts, poor draglines, rounded edges, tightly adhering slag (OAGC-05).	Gas Cutting Defects & Automatic Machines: 15. Gas cutting defects: causes, effects, and corrective remedies. 16. Mechanical and automatic gas cutting machines (pug cutting machines).
WEEK 06	SMAW Power Sources & Butt/Fillet Joints (1G/1F): 19. Square butt joint on MS sheet 2 mm thick in flat position (1G) (OAW-04). 20. Fillet 'T' joint on MS plate 10 mm thick in flat position (1F) (SMAW-04). 21. Open outside corner joint on MS sheet 2 mm thick in flat position (1F) (OAW-05). 22. Fillet lap joint on MS plate 10 mm thick in flat position (1F) (SMAW-05).	Arc Welding Power Sources: 17. Arc welding power sources: Transformer, Generator, Rectifier, and Inverter type machines. 18. Working principles, care & maintenance of arc welding machines. 19. Advantages and disadvantages of AC and DC welding machines.

Week No.	Professional Skills (Trade Practical)	Professional Knowledge (Trade Theory)
WEEK 07	Welding Positions & Symbols (1F/1G): 23. Fillet 'T' joint on MS sheet 2 mm thick in flat position (1F) (OAW-06). 24. Open outside corner joint on MS plate 8/10 mm thick in flat position (1F) (SMAW-06). 25. Fillet lap joint on MS sheet 2 mm thick in flat position (1F) (OAW-07). 26. Single 'V' butt joint on MS plate 10 mm thick in flat position (1G) (SMAW-07).	Standards & Welding Symbols: 20. Welding positions as per EN, ISO & ASME: flat (1G/1F), horizontal (2G/2F), vertical (3G/3F), overhead (4G/4F). 21. Weld slope and weld rotation definitions. 22. Welding symbols as per ISO and AWS standards.
WEEK 08	Arc Length, Polarity & Weld Gauges: 27. Testing of weld joints by visual inspection of welds using weld gauges (I&T-01). 28. Practice maintaining short, medium, and long arc lengths on carbon steel plates and evaluate bead profiles.	Arc Parameters & Quality Inspection: 23. Arc length: importance, types (normal, long, short), effects on weld quality. 24. Polarity: Straight polarity (DCEN) and Reverse polarity (DCEP), applications. 25. Weld quality inspection: visual appearance of sound and defective welds. 26. Universal weld measuring gauges and bridge cam gauges.
WEEK 09	Horizontal Position Welding (2G/2F): 29. Square butt joint on MS sheet 2 mm thick in horizontal position (2G) (OAW-08). 30. Straight line beads and multi-layer practice on MS plate 8/10 mm thick in horizontal position (SMAW-08). 31. Fillet 'T' joint on MS plate 8/10 mm thick in horizontal position (2F) (SMAW-09).	Fuel Gases & Acetylene Generation: 27. Acetylene gas: physical and chemical properties, generation methods. 28. Calcium carbide: production, storage, hazards, and handling regulations. 29. Dissolved Acetylene (DA) cylinders: acetone absorption, safety fuse plugs.
WEEK 10	Horizontal Lap Joints & Oxygen Equipment: 32. Fillet lap joint on MS sheet 2 mm thick in horizontal position (2F) (OAW-09). 33. Fillet lap joint on MS plate 10 mm thick in horizontal position (2F) (SMAW-10).	Oxygen Cylinders & Gas Regulators: 30. Oxygen gas: properties, fractional distillation, industrial manufacturing. 31. Oxygen cylinders: construction, high-pressure storage, color coding. 32. Gas pressure regulators: single-stage vs two-stage regulators, working mechanisms.
WEEK 11	Vertical Position Welding (3G/3F): 34. Fusion run with filler rod in vertical position on 2 mm thick MS sheet (OAW-10). 35. Square butt joint on MS sheet 2 mm thick in vertical position (3G) (OAW-11). 36. Open square butt joint on MS plate 5 mm thick in horizontal position (2G) (SMAW-11). 37. Single 'V' butt joint on MS plate 10/12 mm thick in horizontal position (2G) (SMAW-12).	Blowpipes, Flames & Systems: 33. Gas welding blowpipes: High Pressure (HP) and Low Pressure (injector type) blowpipes. 34. Oxy-acetylene flames: Neutral, Oxidizing, Carburizing chemistry and temperatures. 35. Acetylene generators: water-to-carbide and carbide-to-water designs.
WEEK 12	Vertical Up Welding & Gas Techniques: 38. Fillet 'T' joint on MS sheet 2 mm thick in vertical position (3F) (OAW-12). 39. Straight line beads on MS plate 8/10 mm thick in vertical-up position (SMAW-13). 40. Weaved beads on MS plate 8/10 mm thick in vertical-up position. 41. Fillet 'T' joint on MS plate 10 mm thick in vertical position (3F) (SMAW-14).	Gas Techniques, Arc Blow & Distortion: 36. Gas welding techniques: Leftward (forehand) and Rightward (backhand) techniques. 37. Arc blow: electromagnetic causes, deflection effects, and preventive methods. 38. Distortion in welding: longitudinal, transverse, angular distortion. 39. Methods to control distortion: clamping, preset, skip welding, back-step welding.

Week No.	Professional Skills (Trade Practical)	Professional Knowledge (Trade Theory)
WEEK 13	Vertical Joints & Arc Welding Defects: 42. Fillet lap joint on MS plate 10 mm thick in vertical position (3F) (SMAW-15). 43. Open outside corner joint on MS plate 10 mm thick in vertical position (2F) (SMAW-16). 44. Single 'V' butt joint on MS plate 10/12 mm thick in vertical position (3G) (SMAW-17).	Arc Defects & Pipe Joint Types: 40. Arc welding defects: porosity, undercut, overlap, slag inclusion, lack of fusion, cracks. 41. Causes and remedies of internal and external weld defects. 42. Pipe welding vs plate welding differences, pipe specifications and schedules.
WEEK 14	Overhead Position Welding (4F/4G) & Pipe Joints: 45. Pipe 'T' joint on MS pipe $\varnothing$ 50 mm, 3 mm wall thickness (1F) (OAW-15). 46. Straight line beads on MS plate 6 to 10 mm thick in overhead position (SMAW-18). 47. Pipe flange joint on MS plate with MS pipe $\varnothing$ 50 mm x 3 mm WT (1F) (SMAW-19). 48. Fillet 'T' joint on MS plate 10 mm thick in overhead position (4F) (SMAW-20).	Pipe Developments & Filler Rods: 43. Pipe developments: elbow joints, T-joints, Y-joints, and branch connections. 44. Manifold distribution systems for fuel gases. 45. Gas welding filler rods: classification, composition, sizes, and selection. 46. Gas welding fluxes: types, cleaning action, and removal after welding.
WEEK 15	Pipe Butt Joints & Overhead Single 'V' Butt: 49. Pipe butt joint on MS pipe $\varnothing$ 50 mm, 5 mm WT in 1G position (SMAW-21). 50. Fillet lap joint on MS plate 10 mm thick in overhead position (4F) (SMAW-22). 51. Single 'V' butt joint on MS plate 10 mm thick in overhead position (4G) (SMAW-23). 52. Pipe butt joint on MS pipe $\varnothing$ 50 mm, WT 6 mm (1G rolled) (SMAW-24).	SMAW Electrodes & AWS Coding: 47. Gas brazing & soldering principles, capillary action, fluxes and silver alloys. 48. Covered electrodes: functions of flux coating, coating factor, core wire. 49. AWS/IS electrode classification (e.g. E6013, E7018). 50. Effects of moisture in flux coatings, electrode drying ovens, rebaking cycles.
WEEK 16	Arc Gouging & Copper Pipe Brazing: 53. Arc gouging on MS plate 10 mm thick using carbon electrode and compressed air (AG-01). 54. Butt joint of copper pipe 1/2 inch by gas brazing process (OAW-17). 55. Corner / T-joint of copper pipe 1/2 inch by gas brazing (OAW-19).	Weldability & Thermal Cycles: 51. Weldability of metals, preheating, post-heating, inter-pass temperature control. 52. Weldability of low, medium, and high carbon steels and low alloy steels. 53. Carbon equivalent (CE) formula and cracking tendencies.
WEEK 17	Stainless Steel Welding & Weld Decay: 56. Square butt joint on SS sheet 2 mm thick in flat position (1G) (OAW-18). 57. Square butt & lap joint on SS sheet 2 mm thick by brazing in flat position (SMAW-26).	Stainless Steel Metallurgy: 54. Stainless steel classification: Austenitic, Ferritic, Martensitic, Duplex. 55. Carbide precipitation, weld decay, intergranular corrosion and stabilization. 56. Electrodes and filler wires for stainless steel joining.
WEEK 18	Cast Iron Repair & Aluminium Welding: 58. Single 'V' butt joint on Cast Iron plate 6 mm thick in flat position (1G) (OAW-20). 59. Brazing of cast iron (Single 'V' butt joint) 6 mm thick plate (OAW-21). 60. Square butt joint on Aluminium sheet 3 mm thick in flat position.	Cast Iron & Non-Ferrous Metals: 57. Cast iron types: Grey, White, Malleable, Nodular (SG) iron. 58. Cold and hot welding of cast iron, nickel-based electrodes, preheat requirements. 59. Aluminium welding: oxide film removal (Al ₂ O ₃), fluxes, shielding. 60. Brass and copper welding characteristics.

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WEEK 19	Destructive & Non-Destructive Testing (DT & NDT): 61. Dye penetrant test (DPT) on welded specimens (I&T-02). 62. Magnetic particle test (MPT) on ferromagnetic weld joints (I&T-03). 63. Free bend test and Nick break test on welded coupons (I&T-04). 64. Fillet fracture test (I&T-05) and Ultrasonic testing demonstration (I&T-06).	Weld Inspection & Quality Control: 61. Quality control in welding: inspection stages (before, during, and after welding). 62. Classification of Non-Destructive Testing (NDT): Visual, DPT, MPT, UT, RT. 63. Destructive Testing (DT): Tensile, Bend, Impact, Hardness, Nick break tests. 64. Welding cost estimation and economics.
WEEK 20	GMAW Plant Setup & Metal Transfer Modes: 65. Setting up of GMAW (MIG/MAG) plant, safety equipment, cylinders, wire spool (GMAW-01). 66. Striking an arc and depositing straight line beads on MS plate using different metal transfer techniques. 67. Fillet weld - 'T' joint on MS plate 10 mm thick in flat position (1F) by dip/spray transfer (GMAW-02).	GMAW (MIG/MAG) Fundamentals: 65. Introduction to GMAW process, working principle, plant components and accessories. 66. Advantages of GMAW over SMAW, process limitations and applications. 67. Modes of metal transfer: Dip (Short-circuiting), Globular, Spray, Pulsed spray.
WEEK 21	GMAW Flat Position Joints (1F/1G): 68. Fillet weld - lap joint on MS sheet 3 mm thick in flat position (1F) by dip transfer (GMAW-03). 69. Fillet weld - 'T' joint on MS sheet 3 mm thick in flat position (1F) by dip transfer (GMAW-04). 70. Fillet weld - corner joint on MS sheet 3 mm thick in flat position (1F) by dip transfer (GMAW-05). 71. Butt weld - square butt joint on MS sheet 3 mm thick in flat position (1G) (GMAW-06).	GMAW Variables & Shielding Gases: 68. Process variables: wire feed rate, arc voltage, welding current, travel speed, stick-out. 69. Shielding gases: Argon, Helium, CO ₂ , gas mixtures (Ar+CO ₂ , Ar+O ₂) and shielding reactions. 70. Wire feeding systems: push, pull, push-pull wire feeders.
WEEK 22	GMAW Single 'V' Butt & Flux Cored Arc Welding: 72. Butt weld - single 'V' butt joint on MS plate 8/10 mm thick by dip/spray transfer in flat position (1G) (GMAW-07). 73. Practice FCAW bead deposition using gas-shielded and self-shielded cored wires.	Filler Wires & Flux Cored Arc Welding (FCAW): 71. GMAW solid wires: diameters, copper coating, AWS classification (ER70S-6). 72. Flux Cored Arc Welding (FCAW): description, advantages, flux formulations, AWS coding.
WEEK 23	GMAW Horizontal Joints (2F): 74. Fillet weld - 'T' joint on MS plate 8/10 mm thick in horizontal position (2F) by dip/spray transfer (GMAW-08). 75. Fillet weld - corner joint on MS plate 8/10 mm thick in horizontal position (2F) (GMAW-09). 76. Fillet weld - 'T' joint on MS sheet 3 mm thick in horizontal position (2F) (GMAW-10). 77. Fillet weld - corner joint on MS sheet 3 mm thick in horizontal position (2F) (GMAW-11).	Edge Preparation & GMAW Defects: 73. Edge preparation for various sheet and plate thicknesses in GMAW. 74. GMAW defects: spatter, burn-through, cold lap, lack of side-wall fusion, porosity. 75. Causes and corrective actions for GMAW weld defects.
WEEK 24	GMAW Vertical Position Joints (3F): 78. Fillet weld - 'T' joint on MS plate 8/10 mm thick in vertical position (3F) (GMAW-12). 79. Fillet weld - corner joint on MS plate 8/10 mm thick in vertical position (3F) (GMAW-13). 80. Fillet weld - lap joint on MS sheet 3 mm thick in vertical position (3F) (GMAW-14). 81. Fillet weld - corner joint on MS sheet 3 mm thick in vertical position (3F) (GMAW-15).	Heat Input & Heat Treatment: 76. Heat input calculation (J/mm) and influence on weld cooling rates. 77. Techniques of controlling heat input during positional welding. 78. Post-Weld Heat Treatment (PWHT): stress relief, normalizing, annealing. 79. Use of temperature indicating crayons (Tempilstik).

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WEEK 25	GMAW Overhead & Pipe Welding: 82. Fillet weld - lap and 'T' joint on MS sheet 3 mm thick in overhead position (4F) (GMAW-16). 83. 'T' joint on MS pipe Ø 60 mm OD x 3 mm WT in 1G position (arc constant, rolling pipe) (GMAW-17).	Submerged Arc & Pulsed MIG: 80. Submerged Arc Welding (SAW): principles, flux handling, advantages, limitations. 81. Pulsed MIG welding technology: background current, peak current, spatter-free welding.
WEEK 26	GMAW Stainless Steel Welding: 84. Depositing bead on SS sheet in flat position (GMAW-18). 85. Butt joint on Stainless Steel 2 mm thick sheet in flat position by dip transfer (GMAW-19).	Thermit Welding & Backing Elements: 82. Thermit welding process: thermit chemical reaction, crucibles, railway rail joining. 83. Use of permanent backing strips, ceramic backing bars, copper chill bars.
WEEK 27	GTAW (TIG) Plant Setup & Aluminium Beads: 86. Setting up of GTAW plant, high-frequency arc unit, argon gas cylinder, flowmeter. 87. Depositing bead on Aluminium sheet 2 mm thick in flat position (GTAW-01). 88. Square butt joint on Aluminium sheet 1.6 mm thick in flat position (GTAW-02).	GTAW (TIG) Process Fundamentals: 84. GTAW process: principle, advantages, limitations, and scope. 85. Difference between AC and DC power sources in GTAW, High Frequency (HF) stabilization. 86. Polarities in TIG: DCEN (deep penetration), DCEP (cleaning action), AC square wave (balanced).
WEEK 28	Tungsten Electrodes & Aluminium Fillet Joints: 89. Fillet weld - 'T' joint on Aluminium sheet 1.6 mm thick in flat position (1F) (GTAW-03). 90. Fillet weld - outside corner joint on Aluminium sheet 2 mm thick in flat position (1F) (GTAW-04).	Tungsten Electrodes & Torches: 87. Tungsten electrode types: Pure (Green), Thoriated (Red), Zirconiated (Brown), Ceriated (Grey), Lanthanated (Gold). 88. Electrode tip preparation: grinding angles, balling for AC aluminium welding. 89. GTAW torches: air-cooled vs water-cooled torches, ceramic nozzles, gas lenses.
WEEK 29	GTAW Stainless Steel with Backing Gas: 91. Butt weld - square butt joint on SS sheet 1.6 mm thick in flat position with root purging gas (1G) (GTAW-05). 92. Fillet weld - 'T' joint on SS sheet 1.6 mm thick in flat position (1F) (GTAW-06).	Purging, Filler Wires & Pulsed TIG: 90. Backing/purging gas techniques for stainless steel root protection (Argon backing). 91. GTAW filler rods: selection, composition, and AWS coding. 92. Pulsed TIG welding: heat-sensitive material joining, pulse frequency settings.
WEEK 30	GTAW Pipe Welding (Aluminium & MS): 93. Pipe butt joint on Aluminium pipe Ø 50 mm x 3 mm WT in flat position (1G) (GTAW-07). 94. 'T' joints on MS pipe Ø 50 mm OD x 3 mm WT in flat position (1F) (GTAW-08).	Inert Gases & Special Processes: 93. Inert gases: Argon, Helium, and gas mixtures; ionization potentials, shielding efficiency. 94. GTAW defects: tungsten inclusion, porosity, lack of fusion, causes and remedies. 95. Friction Welding and Friction Stir Welding (FSW) principles.
WEEK 31	Plasma Arc Cutting (PAC): 95. Setting up Plasma Arc Cutting machine, compressed air supply, cutting torch, consumables (nozzle, electrode) (PAC-01). 96. Straight and profile cutting on ferrous (MS, SS) and non-ferrous (Aluminium) sheets.	Plasma Arc Physics & Laser Welding: 96. Plasma state of matter, transferred vs non-transferred plasma arc. 97. Air Plasma Cutting (PAC) principles, operating voltages, nozzle orifices. 98. Laser Beam Welding (LBW) and Electron Beam Welding (EBW) fundamentals.

Week No.	Professional Skills (Trade Practical)	Professional Knowledge (Trade Theory)
WEEK 32	Resistance Spot Welding (RSW): 97. Setting resistance spot welding machine, electrode pressure, squeeze, weld, hold, and off times (RW-01). 98. Lap joint on Stainless Steel sheets by resistance spot welding. 99. Lap joint on Mild Steel sheets by resistance spot welding (RW-02).	Resistance Welding Theory: 99. Resistance welding principles: Joule's heating law ($H = I^2 * R * t$). 100. Resistance spot, seam, projection, and flash butt welding. 101. Water-cooled copper alloy spot welding electrodes, weld nugget formation.
WEEK 33	Brazing Dissimilar Metals & Metallizing: 100. Square butt joint on copper sheet 2 mm thick in flat position (1G) (OAW-22). 101. 'T' joint on Copper to MS sheet 2 mm thick in flat position by brazing (1F) (OAW-23). 102. Silver brazing on SS sheet with copper sheet ('T' joint) (OAW-24). 103. Silver brazing on copper bell-mouth joint (OAW-25).	Brazing & Metal Spraying: 102. Metallizing (thermal spraying): wire arc spray, flame spray, plasma spray principles. 103. Manual oxy-acetylene powder coating processes and applications. 104. Silver brazing alloys, fluxes, capillary attraction, dissimilar joint design.
WEEK 34	WPS, PQR & Cast Iron Machinery Repair: 104. Repair of broken Cast Iron machine parts by oxy-acetylene welding with CI filler rod and bronze filler rod (OAW-26). 105. Repair of broken Cast Iron machine parts using cold arc welding with nickel/CI electrodes (SMAW-27).	Welding Quality Documentation: 105. Reading assembly drawings and fabrication blueprints. 106. Welding Procedure Specification (WPS): essential, supplementary, and non-essential variables. 107. Procedure Qualification Record (PQR) and Welder Performance Qualification (WPQ).
WEEK 35	Hard Facing & Thermoplastic Welding: 106. Hard facing on MS / carbon steel sheet single-layer deposit (SMAW-HF-01). 107. Hard facing on MS component multi-layer deposit (SMAW-HF-02). 108. Plastic welding using hot air gun on thermoplastic sheets (PP, PE, PVC).	Surface Engineering & Plastics: 108. Hard facing and surfacing: necessity, surface preparation, buffer layers. 109. Hard facing alloys: iron-base, cobalt-base (Stellite), carbide composites. 110. Thermoplastics vs thermosetting plastics, hot gas welding of PVC, PP, HDPE.
WEEK 36	Green Welding Simulator - Setup & Virtual SMAW: 109. Demonstrate setting up and fixing green welding simulator hardware and tracking sensors (GWS-1). 110. Program simulator control unit for SMAW process, joint design, welding position, edge preparation (GWS-2). 111. Perform setting of welding parameters (current, arc length, travel angle, work angle) (GWS-3).	Virtual Welding Simulation Technology: 111. Fundamentals of green welding simulators, Augmented Reality (AR) and Virtual Reality (VR) in welding. 112. Safe and controlled simulation training environment, reduction in carbon footprint, power, and metal scrap. 113. Parameter tracking: arc length, travel speed, gun work/travel angles, aim position.
WEEK 37	Virtual GMAW/GTAW Practice & Real-Time Analytics: 112. Perform virtual practice of butt, lap, and T-joints across flat, horizontal, and vertical positions (GWS-4). 113. Take real-time feedback on welding modules and correct technique flaws (GWS-5). 114. Track progress reports, evaluate automated assessment scores on porosity, penetration, and weld profile (GWS-6).	Simulation Mechanics & Analytics: 114. Core simulation mechanics: real-time 3D puddle simulation, physics engines. 115. Advantages: muscle memory development, defect visualization, instant grading. 116. Virtual workshop environments (shipyard, piping, structural plant).
WEEK 38	Comprehensive Welding Practical Assessment: 115. Complete multi-process welding test coupons across SMAW, GMAW, and GTAW on structural plates/pipes; inspect visually and via DPT.	Assessment & Industrial Codes: 117. Industrial welding codes (ASME Section IX, AWS D1.1, EN ISO 9606), welder qualification test procedures, inspection acceptance criteria.
WEEK 39	On the Job Training (OJT) / Group Project Work:	On the Job Training (OJT) / Group Project Work:
WEEK 40	On the Job Training (OJT) / Group Project Work:	On the Job Training (OJT) / Group Project Work:

Week No.	Professional Skills (Trade Practical)	Professional Knowledge (Trade Theory)
WEEK 41	On the Job Training (OJT) / Group Project Work:	On the Job Training (OJT) / Group Project Work:
WEEK 42	On the Job Training (OJT) / Group Project Work:	On the Job Training (OJT) / Group Project Work:

APPROVAL & SIGNATURES

_____ Sign of Instructor	_____ Sign of Group Instructor (GI)	_____ Sign of Superintendent / Principal
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