

Name of Course : MIG-MAG WELDING

Course Content

Theory

- Introduction – Awareness of welding & safety
- Introduction to Gas metal Arc Welding (GMAW)
- Welding Terms and Definitions
- Electrical terms power source & equipments
- Various shielding gases and its character on GMAW
- Cylinders colour code & Identifications
- GMAW welding electrodes – codes
- Torches & Maintenance
- Wire Feed unit
- Modes of metal transfer
- Synergic & pulsed MIG Welding
- FCA Welding process
- Defects causes and remedy.

Practical

- Depositing bead by GMAW
- Butt, fillet joint by GMAW Dip transfer
- Crusiform joint on ms sheet in 1F, 2F, 3F & 4F
- Single “v” joint on MS by Co2 welding
- Square butt joint on S.S.
- Single “v” joint on aluminium
- FCAW on M.S.

Name of Course : DESTRUCTIVE & NON-DESTRUCTIVE TESTING OF WELDMENTS

Course Content

Theory

- Introduction awareness of welding & safety
- Various process of welding and their uses.
- Oxy-acetylene welding process, types of flames and their uses
- Terms and definition of welding
- Types of welding joints
- Nomenclature of welding joints (parameter)
- Electrical Terms, power source AC, DC Polarity and its uses.
- Arc Principle and its characteristics
- TIG, MIG/MAG/FCAW/SAW Advanced Welding and its necessity.
- Metallurgy & weldability Test.
- Electrode classification, coating factor, codes BIS/AWS
- Welding Defects & visual Inspection Technique
- Destructive Test process
- Non-Destructive Test process

Practical

- Oxy Acetylene welding and Brazing process
- MMAW Arc Welding, Different types of joints
- Identification of metals Spark, Sound Test etc.
- Identification of Electrode codes BIS/AWS
- Advanced welding process TIG/MIG/MAG/FCAW/SAW on various metal joining process..
- Powder Spray process.
- Bend Test, Dye Penetrant Test (DPT) Magnetic Particle Test (MPT) Ultrasonic Test (UT) and Rediography Test (RT) "X" Ray reference practice.

Name of Course : WELDING & INSPECTION

Course Content

Theory

- Introduction of welding concepts
- Safety & Awareness for welding shop
- Necessity of welding engineering
- Terms & definition of welding
- Types of welding joints & parameters
- Basic Electrical Terms, Power source, AC,DC Polarity system
- Arc principle & characteristics
- Various types of welding process, SMAW, TIG, MIG MAG, FCAW, SAW & C2 H2 welding etc.
- Weldability Test
- Resistance welding process
- Electrodes, coating & codes BIS/AWS
- Visual Inspection System
- Destructive & Non-Destructive test methods

Practicals

- Welding on M.S. by Arc & Oxy Acetylene welding
- Preparation of edges concepts
- C2 H2 + O2 Flame settings - Types of flames
- SMAW in various elements and its use in welding practice fillet & butt weld.
- MIG/MAG FCAW practice
- TIG Welding practice on Al. & SS & M.S.
- Resistance & SAW Arc Welding practice
- Handling gauges/measuring system on welding
- Inspection Techniques visual DPT, MPT and RT reference practice.

Name of Course : WELDING REPAIRS & MAINTENANCE

Course Content

Theory

- Introduction Industrial safety awareness
- Principle of maintenance welding
- Welding & cutting Terms and Definitions
- Oxy-Acetylene welding on various metals
- Basic welding metallurgy, Preheating & Post heating treatment
- Selection of Electrodes and Filler rods
- MMAW & Resistance welding process
- Welding of Cast iron & bronze welding
- Soldering and brazing process
- Hard facing & surfacing process
- MIG & TIG welding process
- Powder spray and sterling process
- Defect causes and remedy.

Practical

- Study of various welding machines
- Oxy Acetylene welding, Brazing, soldering practice
- Cutting & gouging process (Plasma & Oxy-Ace)
- MIG/MAG Welding on M.S. S.S. & Al.
- MIG Brazing on M.S.
- TIG Welding on S.S. M.S. & Cu
- Welding of CI
- Braze weld on C.I.
- Sterling process
- Hard facing/surfacing
- Powder Spray process
- Pre heat/post heat operation and inspection

Name of Course : HIGH PRESSURE PIPE WELDING – 6G

Course Content

Theory

- Introduction, awareness of welding & safety
- Welding terms & Definition
- Parameter for welding
- Electrical, Terms, Power source AC, DC & Polarity controls
- Arc Principles & Characteristic
- Introduction of pipes and its schedule
- Introduction to H.P. Pipe Welding
- Electrodes for H.P. Pipe, codes BIS/AWS
- Root pass pipe welding procedure
- Cover pass pipe welding procedure
- Welding positions, 1G, 2G, 3G, 5G & 6G
- Codes standards and qualification procedure WPS & PQR
- Defects, causes and remedy

Practical

- SMAW on MS plates
- Single "V" on M.S flat 1G & 2G
- Cover pass on M.S. Flat by SMAW with cover pass
- Root pass & cover pass on SH pipe in 5G
- Root pass and cover pass by SMAW in 6G
- Nomenclature & inspection of pipe joints.

Name of Course : TIG WELDING

Course Content

Theory

- Introduction, awareness of welding & safety
- Terms & definition of welding
- Electrical terms & AC, DC Polarity control system
- Introduction to GTAW equipments and power source
- Types of tungsten electrodes and their uses
- Types of Inert gases and their character in shielding
- Properties of ferrous & non- ferrous metals
- Principle of HF unit & DC suppressor, torches and maintenance
- Concept of pulsed TIG Welding
- Defects, causes and remedy.

Practicals

- Oxy-Acetylene welding practice on M.S.
- TIG Welding machine current setting & operation- safety
- Depositing bead by GTAW
- Joints on M.S. Sheets (Butt & Fillet)
- Joints on Aluminium (Butt & fillet)
- Joints on Stainless Steel (Butt & Fillet)
- Polarity control system
- Pulsed/wave current activities.

Name of Course : RESISTANCE WELDING

Course Content

Theory

- Introduction to welding process instruments
- Various types electric resistance welding machines and their uses.
- Basic Electrical terms and current concepts
- Power source and its character of resistance
- Introduction of resistance welding electrodes concepts
- Cooling system & parameter settings
- Application on weld metals
- Defects, causes and remedy.

Practicals

- Introduction to Electric Resistance Welding machines
- Principle of equipments and operations
- Current/Compressor Air/applied Pressure – setting practice
- Preparation of metal practice
- Spot welding machine current setting welding practice
- Seam welding machine current setting welding practice
- Butt welding machine current setting welding practice
- Inspection and testing of joints.

Name of Course : STAINLESS STEEL WELDING

Course Content

Theory

- Introduction to welding process instruments
- Basic Electrical Terms & Arc voltage concepts
- Power source of GTAW welding, AC, DC Supressor & HFU
- Types of tungsten electrodes and its tip preparations
- Characteristic of Inert gas
- Types of SS and its metallurgy for welding
- Introduction of MIG welding on S.S
- Current setting, Arc voltage – parameter
- Defects, causes and remedy.

Practicals

- Oxy-Acetylene welding for torch holding practice
- GTAW welding machine, current settings & bead practice
- Selection of tungsten electrode for AC & DC welding
- Butt & fillet joint practice on S.S by GTAW process
- Preparation of S.S. for MIG Welding – current setting
- Butt & fillet joint practice on S.S. by MIG Process
- Inspection & Testing of aluminium joints.

Name of Course : ALUMINIUM WELDING

Course Content

Theory

- Introduction to welding process instruments
- Basic Electrical Terms & Arc Voltage concepts
- Power source of GTAW welding, AC, DC Supressor & HFU
- Types of tungsten electrodes and its tip preparation.
- Characteristic of inert gas
- Properties of Aluminium
- Introduction of MIG Welding on Aluminium
- Current setting, Arc Voltage parameter
- Defects causes and remedy.

Practicals

- Oxy Acetylene welding for torch holding practice
- GTAW Welding machine, current setting & bead practice.
- Preparation of tungsten electrode AC& DC Welding
- Butt & fillet joint practice on aluminium by GTAW process
- Edge preparation for MIG Welding – current setting
- Butt & fillet joint practice on Aluminium by MIG process
- Inspection & Testing of aluminium joints

Name of Course : SUB-MERGED ARC WELDING

Course Content

Theory

- Principle of welding process
- Welding Terms and definitions
- Power source – Principles
- Set up of wire feeder and its function
- Concept of OCV & Arc voltage
- Flux – Grades and its applications
- SAW Parameter setting & welding procedure
- Welding defects & Inspection methods

Practicals

- Study of SAW welding machine & beading practice
- Parameter setting for deposit on base metal
- Square butt joint by SAW
- "T" joint by SAW
- Single "V" but by SAW
- Double "V" but by SAW practice