

## WELDING COURSE CALENDAR

Sr. No.	Course No.	Course Dates	Course Title	Who should attend
1	A2	7 <sup>th</sup> , 8 <sup>th</sup> , 9 <sup>th</sup> June 2010	CO <sub>2</sub> / MIG-MAG Welding	Engineers / Supervisors / Charge Hands / Self Employed / Managers / Students
	<b>Course Topic</b>			
Introduction / Safety / Welding Terms / Equipments & Accessories / Equipment Characteristics / Weld Joints & Positions / Welding Variables / Effect of variable / Types of currents & polarity / Electrode sizes & shapes / Process Applications & limitations / Storage of consumables Solid, Flux cored & Flat wires / Wire composition and effect of various elements in wires / Burn-offs / Semi Consumables / MIG Welding / MAG Welding / MIG spot welding / MIG Brazing / MIG Pulse Welding / Power sources, wire feeders, Torches / Gas nozzles / spatter / 2&4 roll drives / 2&4 track operations / Types of Metal Transfers Spray & dip transfers / Droplet frequency / Their advantages & disadvantages / Shielding gases & Gas mixtures & their selection / Regulators / Gas pre heaters / Properties of shielding Gases / Alternatives to shielding gases / Solid ice formation / Welding parameters Adjustments & effects / Welding Defects, causes & remedies / Welding positions as per EN&ISO Standards / Weld Nomenclature / Types of edge preparation / Welding Symbols as per AWS / Location Thereof / Asymmetrical preparations / Supplementary Symbols / Pre & Post heat / AWS Codes / Distortion & Deformation / manipulation / Hands on Training				
2	A1	28 <sup>th</sup> , 29 <sup>th</sup> , 30 <sup>th</sup> June 2010	Basics of Welding (Refresher Course)	Design Engineers / Shop Supervisors / Cost Engineers / Self Employed / Managers
	<b>Course Topic</b>			
Introduction / Safety / Welding Terms / Equipments & Accessories / Various processes / Weld joints & poisons / Weld ability / Welding Variables & its effects / Types of currents, polarities, its selection , Blow arc, Electrode Consturction, composition, storage / Arc length / Effects of arc length fore hand & back hand techniques / Intoduction to MMA / MIG-MAG / TIG & PULSE TIG / SAW / Resistance processes / Electrode & Flux ovens / Equipments Transformers, rectifiers, Generators, Diode type, Thyristorised, invester based / Types of joints / Welding positions / Weld Defects, causes, remedies, EN & ISO Standards / Weld nomenclature / Penetration edge preparation / welding symbols / Pre and Post heat / AWS codes / Distortion & Deformation / Process comparision and selection / Up-hill and down hill welding fore hand and back hand welding / Electrode manipulation / Hands on training				

	A6	12 <sup>th</sup> , 13 <sup>th</sup> , 14 <sup>th</sup> July 2010	Inspection & Quality in welding	Welding Inspectors / Quality Inspectors / Design Engineers / Managers / Students
	<b>Course Topic</b>			
3	Introduction / Importance of quality / Roll of inspection personal / Fundamentals of Welding metallurgy / Welding Symbols / Welding consumables, sizes, storage, effect of Atmosphere / Welding procedures / Inspection / post weld treatments / Basic welding / safety / defects, its causes remedies /j Evaluation and identification of defects / welding term manipulation / joints and positions / Electrode size and proper welding currents / effect of over currents, Arc blow, polarity / Up-hill & down Hill welding, fore hand and back hand welding effects / Effects of arc length variations / Effect of poor welding on weld cost / DT and NDT procedure and records / Welding Codes & its typers / Defects, causes, remedies / Hands on training			
	A4	26 <sup>th</sup> , 27 <sup>th</sup> , 28 <sup>th</sup> July 2010	Oxy-fuel gas welding, cutting and Brazing	Operators / Supervisors / Engineers / Inspectors / Welders desirous to learn gas welding
	<b>Course Topic</b>			
4	Introduction to process / Equipments required for welding / cutting brazing / Gas cylinders / Manifolds / Regulators / Regulator types / Single & Double stage / Gas hoses / Construction of cutters, Brazing torches / Nozzles / Flash-back & flash back arresters / Fillers and fluxes / storages types of flames / Heat distribuition of flames / joint design / metal testing / nozzle size and metal thickness / back fire care of hose pipe and equipments / flame structure & types / effects of C, Mn, Si, S, Ni, Cr etc in filler rods / silver braxing / hard facing / health and safety / erlding of copper and alloys / Aluminium / Brass / Silver / Cutting equipments / Profile cutting machines / St. line cutting machines / Multi torch cutting / hands on training			

5	A5	16 <sup>th</sup> , 17 <sup>th</sup> , 18 <sup>th</sup> Aug 2010	Cost and Quality in welding	Quality Inspectors / Design Engineers / Production Managers / Cost Engineers / Self Employed / Students
	<b>Course Topic</b>			
	<p>Concept of quality / Roll of quality in welding / Relation of quality and cost / Economics of welding / signs, symbols on drawings of welding / Terminology of welding / Welded joints &amp; its strength / Effect of edge preparation / use of correct process, equipments, parameters welding procedures and records / Duties and roll of inspectors in Q.A. &amp; Q.C. / Application and purposes of codes and its types / Defects, causes, remedies / Evaluation and identification of defects / joints and positions / Welding codes and types / Introduction to various welding processes, their application, limitations &amp; cost effectiveness / costing of economical welding / Apparent &amp; effective cost of welding consumables / Deposition efficiency of electrodes / Determination of electrode consumption per meter length / Stub losses / Determination of welding time / Determination of current consumption / Pure melting time / Definition and significance of weld length coefficient / Max and Min weld length coefficient / Economics of deep penetration electrodes / Economics of high deposition electrode / Hands on Training</p>			
6	A3	6 <sup>th</sup> , 7 <sup>th</sup> , 8 <sup>th</sup> Sept 2010	TIG / Argon Arc Welding	S.S. Welders / Inspectors / Welding Supervisors / S.S. Fabricators / MMAW welders / QA, QC, Cost Engineers & Managers
	<b>Course Topic</b>			
	<p>Introduction to TIG / Argon arc process / AC &amp; DC TIG welding / Equipments for AC / DC welding, Torches and accessories / Shielding Gas and its properties, Gas regulators, flow meter / Arc shape / Penetration / Economics and quality of TIG welding / Pulse operation / Pre flow, post flow / Up Slop-Down slop / Peak current , base current / Cater filling / Selection of electrodes / Application and limitations of process / Weldable material selection of consumables / Torch angle / Arc length / Up hill and Down hill in Tig / forward &amp; Backword techniques &amp; effect / Welding of Aluminium / Welding of S.S. / Welding of rare metals / Gas Purging / Advantages of Single-Double pulse welding / puddle / weld defects &amp; causes / Safety / Hands on training</p>			