

VOCATIONAL EDUCATION AND TRAINING AUTHORITY

COURSE CONTENT OUTLINES FOR WELDING AND METAL FABRICATION

Structure Year: 2009

Level One

MODULE #: 1.0 MODULE TITLE: PERFORMING BENCH
WORK

UNIT #: 1.1 UNIT TITLE: HAND
HACKSAW CUTTING

#	CODE	ELEMENTS
1	1.1.1	Cut Straight Sawing
2	1.1.2	Cut Angular Sawing

UNIT #: 1.2 UNIT TITLE: FILLING

#	CODE	ELEMENTS
1	2.1.1	Draw File a Metal
2	2.1.2	Longitudinal File a Metal
3	2.1.3	Cross File a Metal

UNIT #: 1.3 UNIT TITLE: POWER SAW

#	CODE	ELEMENTS
1	1.3.1	Cut Round Bar
2	1.3.2	Cut Flat Bar

UNIT #: 1.4 UNIT TITLE: HAND DRILLING

#	CODE	ELEMENTS
1	1.4.1	Drill a hole on a plate using twist drill

UNIT #: 1.5

UNIT TITLE: BENCH DRILLING

#	CODE	ELEMENTS
1	1.5.1	Drill a hole on a plate using twist drill
2	1.5.2	Counter sink a drilled hole
3	1.5.3	Counterbore a drilled hole

UNIT #: 1.6

UNIT TITLE: MANUAL THREAD CUTTING

#	CODE	ELEMENTS
1	1.6.1	Tap a Round bar
2	1.6.2	Die a drilled hole on a plate

MODULE #: 3.0

MODULE TITLE: PERFORMING ARC WELDING

UNIT #: 3.1

UNIT TITLE: CARRYOUT MILD STEEL ARC WELDING

#	CODE	ELEMENTS
1	3.1.1	Use of tools and equipment
2	3.1.2	Weld straight beads
3	3.1.3	Weld metal in downhand butt joint
4	3.1.4	Weld metal in downhand lap joint
5	3.1.5	Weld metal in downhand corner joint
6	3.1.6	Weld metal in downhand tee joint
7	3.1.7	Weld metal in horizontal butt joint
8	3.1.7	Weld metal in downhand butt joint
9	3.1.8	Weld metal in horizontal tee joint
10	3.1.9	Weld metal in horizontal lap joint
11	3.1.10	Weld metal in horizontal corner joint

UNIT #: 3.2

UNIT TITLE: CARRYOUT MILD STEEL ARC CUTTING

1	3.2.1	Cut thick metals
2	3.2.2	Gouge metal plates

MODULE #: 2.0

MODULE TITLE: PERFORMING SHEET METAL WORK

UNIT #: 2.1

UNIT TITLE: HAND SHEARING

#	CODE	ELEMENTS
1	2.1.1	Straight shear a sheet metal
2	2.1.2	ircular piece on sheet meta

UNIT #: 2.2

UNIT TITLE: MACHINE SHEARING

#	CODE	ELEMENTS
1	2.2.1	Straight shear asheet metal

UNIT #: 2.3

UNIT TITLE: SHEET METAL FORMING

#	CODE	ELEMENTS
1	2.3.1	Bend right angle ona sheet metal

UNIT #: 2.4

UNIT TITLE: SOFT SOLDERING

#	CODE	ELEMENTS
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#	CODE	ELEMENTS
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1	2.4.1	Join metal sheets by soldering
2	2.4.2	Join pipes by soldering

UNIT #: 2.5

UNIT TITLE: RIVETING

#	CODE	ELEMENTS
1	2.5.1	Join thick plates by hot riveting
2	2.5.2	Join thin sheets by cold riveting
3	2.5.3	Join metal sheet by pop riveting

UNIT #: 2.6

UNIT TITLE: GRINDING

#	CODE	ELEMENTS
1	2.6.1	Grind weld seams
2	2.6.2	Grind weld jpoints
3	2.6.3	Sharpen cutting tools

MODULE #: 4.0

MODULE TITLE: PERFORMING GAS WELDING AND BRAZING ON FERROUS METAL

UNIT #: 4.1

UNIT TITLE: CARRY OUT SHEET METAL WELDING

#	CODE	ELEMENTS
1	4.1.1	Use of gas welding tools and equipment
2	4.1.2	Make fusion welding on sheet metal
3	4.1.3	Welding metal in down hand butt joint
4	4.1.4	Weld metal in downhand tee joint
5	4.1.5	Weld metal in corner
6	4.1.6	Weld metal in horizontal butt joint
7	4.1.7	Welding metal in horizontal tee joint
8	4.1.8	Weld metal in horizontal corner joint

UNIT #: 4.2.

UNIT TITLE: CARRY OUT METAL BRAZING AND BRONZE WELDING

#	CODE	ELEMENTS
1	4.2.1	Bronze weld butt joint
2	4.2.2	Bronze weld tee joint
3	4.2.3	Bronze weld lap joint. Bronze weld corner joint
4	4.2.4	Braze sheet metal seam
5	4.2.5	Braze copper/steel pipe

UNIT #: 4.3

UNIT TITLE: CARRY OUT METAL CUTTING BY FLAME

#	CODE	ELEMENTS
1	4.3.1	Cut thick and thin metal
2	4.3.2	Cut square and round holes
3	4.3.3	Make chamfer and remove risers

4	4.3..4	Gouge metal plate/bar
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Structure Year: 2013

Level One

MODULE #: WF 101 MODULE TITLE: MAINTAINING SAFETY OF WORKSHOP AND SURROUNDINGS

UNIT #: 1.1 UNIT TITLE: MAINTAINING WORKSHOP SAFETY

#	CODE	ELEMENTS
1	1.1.1	Maintaining workshop safety rules
2	1.1.2	Maintaining workshop working environment
3	1.1.3	Maintaining personal safety

UNIT #: 1.2 UNIT TITLE: HANDLING ACCIDENTS AND INCIDENTS

#	CODE	ELEMENTS
1	1.2.1	Handle mechanical hazards
2	1.2.2	Handle Physical hazards
3	1.2.3	Handle chemical hazards
4	1.2.4	Handle electrical hazards
5	1.2.5	Maintain safety gears

UNIT #: 1.3 UNIT TITLE: HANDLING FIRE ACCIDENTS

#	CODE	ELEMENTS
1	1.3.1	Handle fire fighting equipment and materials
2	1.3.2	Handling different types of fire

UNIT #: 1.4 UNIT TITLE: PERFORMING FIRST AID

#	CODE	ELEMENTS
1	1.4.1	Perform artificial respiration
2	1.4.2	Perform first aid to minor wound scalpels.

MODULE #: WF 102 MODULE TITLE: PERFORMING PREVENTIVE MAINTENANCE OF TOOLS, MACHINES AND EQUIPMENT

UNIT #: 2.1 UNIT TITLE: CONDUCTING PREVENTIVE MAINTENANCE OF WORK TOOLS

#	CODE	ELEMENTS
1	2.1.1	Maintaining workshop safety gears
2	2.1.2	Maintaining workshop tools
3	2.1.3	Maintaining workshop equipment and machines

MODULE #: WF 103 MODULE TITLE: BENCH WORK

UNIT #: 3.1 UNIT TITLE: HAND HACKSAW CUTTING

#	CODE	ELEMENTS
1	3.1.1	Cut straight sawing
2	3.1.2	Cut angular sawing

UNIT #: 3.2 UNIT TITLE: FILLING A METAL

#	CODE	ELEMENTS
1	3.2.1	Draw file a metal
2	3.2.2	Longitudinal file a metal
3	3.2.3	Cross file a metal

UNIT #: 3.3

UNIT TITLE: POWER SAW CUTTING

#	CODE	ELEMENTS
1	3.3.1	Cut round bar
2	3.3.2	Cut flat bar

UNIT #: 3.4

UNIT TITLE: HAND DRILLING

#	CODE	ELEMENTS
1	3.4.1	Drill a hole on a plate using twist drill

UNIT #: 3.5

UNIT TITLE: BENCH DRILLING

#	CODE	ELEMENTS
1	3.5.1	Drill hole on a plate using twist drill
2	3.5.2	Counter sink a drilled hole
3	3.5.2	Counter bore a drilled hole

UNIT #: 3.6

UNIT TITLE: MANUAL THREAD CUTTING

#	CODE	ELEMENTS
1	3.6.1	Tap a round bar
2	3.6.2	Die a drilled hole on a plate

MODULE #: WF 104

MODULE TITLE: SHEET METAL WORK

UNIT #: 4.1

UNIT TITLE: HAND SHEARING

#	CODE	ELEMENTS
1	4.1.1	Straight shear a sheet metal

UNIT #: 4.2

UNIT TITLE: MACHINE SHEARING

#	CODE	ELEMENTS
1	4.2.1	Straight shear a sheet metal

UNIT #: 4.3

UNIT TITLE: SHEET METAL FORMING

#	CODE	ELEMENTS
1	4.4.1	Bend right angle on a sheet metal
2	4.4.2	Form single and double seam on a sheet metal
3	4.4.3	Form grooves on a sheet metal
4	4.4.4	Form cylindrical shapes from sheet metal

UNIT #: 4.4

UNIT TITLE: SOFT SOLDERING

#	CODE	ELEMENTS
1	4.4.1	Join metal sheets by soldering
2	4.4.2	Join pipes by soldering

UNIT #: 4.5

UNIT TITLE: RIVETING

#	CODE	ELEMENTS
1	4.5.1	Join thick plates by hot riveting
2	4.5.2	Join thin sheets by cold riveting

UNIT #: 4.6

UNIT TITLE: GRINDING

#	CODE	ELEMENTS
1	4.6.1	Grind weld seams
2	4.6.2	Grind weld joints
3	4.6.3	Sharpen cutting tools

MODULE #: WF 105

MODULE TITLE: PERFORMING ALL
POSITIONS ARC WELDING

UNIT #: 5.1

UNIT TITLE: CARRY OUT MILD STEEL ARC WELDING

#	CODE	ELEMENTS
1	5.1.1	Use of tools and equipment
2	5.1.2	Weld straight beads
3	5.1.3	Weld metal in down hand butt joint
4	5.1.4	Weld metal in down hand lap joint
5	5.1.5	Weld metal in down hand corner joint
6	5.1.6	Weld metal in down hand tee joint
7	5.1.7	Weld metal in horizontal butt joint
8	5.1.8	Weld metal in horizontal tee joint
9	5.1.9	Weld metal in horizontal lap joint
10	5.1.10	Weld metal in horizontal corner joint

UNIT #: 5.2

UNIT TITLE: CARRY OUT MILD STEEL ARC CUTTING

#	CODE	ELEMENTS
1	5.2.1	Cut thick metals
2	5.2.2	Gouge metal plates

MODULE #: WF 106

MODULE TITLE: PERFORMING GAS WELDING AND BRAZING ON FERROUS METALS

UNIT #: 6.1

UNIT TITLE: CARRY OUT SHEET METAL WELDING

#	CODE	ELEMENTS
1	6.1.1	Use of gas welding tools and equipment
2	6.1.2	Make fusion welding on sheet metal
3	6.1.3	Weld metal in down hand butt joint
4	6.1.4	Weld metal in down hand tee joint
5	6.1.5	Weld metal in corner joint

6	6.1.6	Weld metal in horizontal butt joint
7	6.1.7	Weld metal in horizontal tee joint
8	6.1.8	Weld metal in horizontal corner joint

UNIT #: 6.2

UNIT TITLE: CARRY OUT METAL BRAZING AND BRONZE WELDING

#	CODE	ELEMENTS
1	6.2.1	Bronze weld butt joint
2	6.2.2	Bronze weld tee joint
3	6.2.3	Bronze weld lap joint
4	6.2.4	Bronze weld corner joint
5	6.2.5	Braze sheet metal seam
6	6.2.6	Braze copper/steel pipe

UNIT #: 6.3

UNIT TITLE: CARRY OUT METAL CUTTING BY FLAME

#	CODE	ELEMENTS
1	6.3.1	Cut thick and thin metals
2	6.3.2	Cut square and round holes
3	6.3.3	Make chamfers and remove risers
4	6.3.4	Gouge metal plate/bar

Structure Year: 2009

Level Two

MODULE #: 5.0

MODULE TITLE: PERFORM RESISTANCE WELDING

UNIT #: 25.1

UNIT TITLE: CARRY OUT RESISTANCE WELDING ON SHEET METAL

#	CODE	ELEMENTS
1	25.1.1	Weld sheet metal using resistance
2	25.1.2	Spots
3	25.1.3	Seam welding
4	25.1.4	Weld round bars using resistance
5	25.1.5	Flash welding

MODULE #: 1.0

MODULE TITLE: PERFORMING ARC WELDING OF ARROYS STEELS AND FERROUS METALS

UNIT #: 21.1

UNIT TITLE: CARRY OUT WELDING OF ALLOY STEELS AND FERBOURS METALS

#	CODE	ELEMENTS
1	21.1.1	Weld Stainless Metal
2	21.1.2	Weld Cast Iron Metal

UNIT #: 21.2

UNIT TITLE: CARRY OUT WELDING OF STAINLESS AND CARBON STEEL BY TIG

#	CODE	ELEMENTS
1	21.2.1	Weld stainless steel pipe
2	21.2.2	Weld carbon steel pipe

UNIT #: 21.3

UNIT TITLE: CARRY OUT WELDING OF STAINLESS AND CARBON STEEL PIPES BY TID

#	CODE	ELEMENTS
1	21.3.1	Weld stainless steel pipe
2	21.3.2	Weld carbon steel pipe

UNIT #: 21.4

UNIT TITLE: FILL WORN OUT METAL SURFACE

#	CODE	ELEMENTS
1	21.4.1	Deposit metal by welding

UNIT #: 21.5

UNIT TITLE: CARRY OUT ON STEEL PLATES USING PLASMA ARC CUTTING

#	CODE	ELEMENTS
1	21.5.1	Cut steel plate

MODULE #: 3.0

MODULE TITLE: PERFORMING FABRICATION WORK ACCORDING TO DRAWING

UNIT #: 23.1

UNIT TITLE: UNDERTAKE SHEET METAL WORK

#	CODE	ELEMENTS
1	23.1.1	Fabricate a cone from sheet metal
2	23.1.2	Fabricate an offset cone

MODULE #: 4.0

MODULE TITLE: PERFORMING SITE INSTALLATION INVOLVING WELDING

UNIT #: 24.1

UNIT TITLE: CARRYOUT WELDING WORKS OF STEEL STRUCTURES

#	CODE	ELEMENTS
1	24.1.1	Fabricate/weld a steel truss
2	24.1.2	Fasten a fabricated stuccheon by expansion rawbolts

MODULE #: 2.0

MODULE TITLE: PERFORMING GAS WELDING ON FERROUS AND NON FERROUS METALS

UNIT #: 22.1

UNIT TITLE: CARRY OUT WELDING OF FERROUS METALS

#	CODE	ELEMENTS
1	22.1.1	Weld mild steel in vertical position
2	22.1.2	Weld mild steel in overhead position

UNIT #: 22.2

UNIT TITLE: CARRY OUT WELDING OF NON FERROUS METALS

#	CODE	ELEMENTS
1	22.1.2	Weld aluminium metal
2	22.1.2	Weld copper alloys

UNIT #: 22.3

UNIT TITLE: CARRY OUT OXY-FUEL POWDER CUTTING

#	CODE	ELEMENTS
1	22.3.1	Cut cast iron material
2	22.3.2	Cut aluminium metal
3	22.3.3	Cut copper metal

Structure Year: 2013

Level Two

MODULE #: WF 201

MODULE TITLE: PERFORMING ARC WELDING OF ALLOY STEELS AND FERROUS METALS

UNIT #: 1.1

UNIT TITLE: CARRYOUT WELDING OF ALLOY STEELS AND FERROUS METALS

#	CODE	ELEMENTS
1	4.1.1	Fabricate/weld a steel truss
2	4.1.2	Fasten a fabricated stuncheon by expansion rawlbolts

MODULE #: WF 205

MODULE TITLE: PERFORMING RESISTANCE WELDING

UNIT #: 5.1

UNIT TITLE: CARRYOUT RESISTANCE WELDING ON SHEET METALS

#	CODE	ELEMENTS
1	5.1.1	Weld sheet metals using resistance spots
2	5.1.2	Weld sheet metals using resistance seam welding
3	5.1.3	Weld round bars using resistance flash welding