

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL - TECHNICAL-VOCATIONAL LIVELIHOOD TRACK
INDUSTRIAL ARTS - GAS METAL ARC WELDING (GMAW) NC II
(320 hours)

These are the specializations and their pre-requisites. These lists should be used as reference for curriculum maps.

AGRI-FISHERY ARTS

	Specialization	Number of Hours	Pre-requisite
1.	Agricultural Crops Production (NC I)	320 hours	
2.	Agricultural Crops Production (NC II) <i>updated based on TESDA Training Regulations published December 28, 2013</i>	640 hours	
3.	Agricultural Crops Production (NC III)	640 hours	Agricultural Crops Production (NC II)
4.	Animal Health Care Management (NC III)	320 hours	Animal Production (Poultry-Chicken) (NC II) or Animal Production (Ruminants) (NC II) or Animal Production (Swine) (NC II)
5.	Animal Production (Poultry-Chicken) (NC II) <i>updated based on TESDA Training Regulations published December 28, 2013</i>	320 hours	
6.	Animal Production (Large Ruminants) (NC II) <i>updated based on TESDA Training Regulations published December 28, 2013</i>	320 hours	
7.	Animal Production (Swine) (NC II) <i>updated based on TESDA Training Regulations published December 28, 2013</i>	320 hours	
8.	Aquaculture (NC II)	640 hours	
9.	Artificial Insemination (Large Ruminants) (NC II)	160 hours	Animal Production (Large Ruminants) (NC II)
10.	Artificial Insemination (Swine) (NC II)	160 hours	Animal Production (Swine) (NC II)
11.	Fish Capture (NC II)	640 hours	
12.	Fishing Gear Repair and Maintenance (NC III)	320 hours	
13.	Fish-Products Packaging (NC II)	320 hours	
14.	Fish Wharf Operation (NC I)	160 hours	
15.	Food Processing (NC II)	640 hours	
16.	Horticulture (NC III)	640 hours	Agricultural Crops Production (NC II)
17.	Landscape Installation and Maintenance (NC II)	320 hours	
18.	Organic Agriculture (NC II)	320 hours	
19.	Pest Management (NC II)	320 hours	
20.	Rice Machinery Operations (NC II)	320 hours	
21.	Rubber Processing (NC II)	320 hours	
22.	Rubber Production (NC II)	320 hours	
23.	Slaughtering Operations (Hog/Swine/Pig) (NC II)	160 hours	

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL - TECHNICAL-VOCATIONAL LIVELIHOOD TRACK
INDUSTRIAL ARTS - GAS METAL ARC WELDING (GMAW) NC II
(320 hours)

HOME ECONOMICS

	Specialization	Number of Hours	Pre-requisite
1.	Attractions and Theme Parks Operations with Ecotourism (NC II)	160 hours	
2.	Barbering (NC II)	320 hours	
3.	Bartending (NC II)	320 hours	
4.	Beauty/Nail Care (NC II)	160 hours	
5.	Bread and Pastry Production (NC II)	160 hours	
6.	Caregiving (NC II)	640 hours	
7.	Commercial Cooking (NC III)	320 hours	Cookery (NC II)
8.	Cookery (NC II)	320 hours	
9.	Dressmaking (NC II)	320 hours	
10.	Events Management Services (NC III)	320 hours	
11.	Fashion Design (Apparel) (NC III)	640 hours	Dressmaking (NC II) or Tailoring (NC II)
12.	Food and Beverage Services (NC II) <i>updated based on TESDA Training Regulations published December 28, 2013</i>	160 hours	
13.	Front Office Services (NC II)	160 hours	
14.	Hairdressing (NC II)	320 hours	
15.	Hairdressing (NC III)	640 hours	Hairdressing (NC II)
16.	Handicraft (Basketry, Macrame) (Non-NC)	160 hours	
17.	Handicraft (Fashion Accessories, Paper Craft) (Non-NC)	160 hours	
18.	Handicraft (Needlecraft) (Non-NC)	160 hours	
19.	Handicraft (Woodcraft, Leathercraft) (Non-NC)	160 hours	
20.	Housekeeping (NC II) <i>updated based on TESDA Training Regulations published December 28, 2013</i>	160 hours	
21.	Local Guiding Services (NC II)	160 hours	
22.	Tailoring (NC II)	320 hours	
23.	Tourism Promotion Services (NC II)	160 hours	
24.	Travel Services (NC II)	160 hours	
25.	Wellness Massage (NC II)	160 hours	

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL - TECHNICAL-VOCATIONAL LIVELIHOOD TRACK
INDUSTRIAL ARTS - GAS METAL ARC WELDING (GMAW) NC II
(320 hours)

INDUSTRIAL ARTS

	Specialization	Number of Hours	Pre-requisite
1.	Automotive Servicing (NC I) <i>updated based on TESDA Training Regulations published December 28, 2013</i>	640 hours	
2.	Automotive Servicing (NC II)	640 hours	Automotive Servicing (NC I)
3.	Carpentry (NC II)	640 hours	
4.	Carpentry (NC III)	320 hours	Carpentry (NC II)
5.	Construction Painting (NC II)	160 hours	
6.	Domestic Refrigeration and Air-conditioning (DOMRAC) Servicing (NC II)	640 hours	
7.	Driving (NC II)	160 hours	
8.	Electrical Installation and Maintenance (NC II)	640 hours	
9.	Electric Power Distribution Line Construction (NC II)	320 hours	Electrical Installation and Maintenance (NC II)
10.	Electronic Products Assembly and Servicing (NC II) <i>updated based on TESDA Training Regulations published December 28, 2013</i>	640 hours	
11.	Furniture Making (Finishing) (NC II)	640 hours	
12.	Instrumentation and Control Servicing (NC II)	320 hours	Electronic Products Assembly and Servicing (EPAS) (NC II)
13.	Gas Metal Arc Welding (GMAW) (NC II)	320 hours	Shielded Metal Arc Welding (SMAW) (NC II)
14.	Gas Tungsten Arc Welding (GTAW) (NC II)	320 hours	Shielded Metal Arc Welding (GMAW) (NC II)
15.	Machining (NC I)	640 hours	
16.	Machining (NC II)	640 hours	Machining (NC I)
17.	Masonry (NC II)	320 hours	
18.	Mechatronics Servicing (NC II)	320 hours	Electronic Products Assembly and Servicing (EPAS) (NC II)
19.	Motorcycle/Small Engine Servicing (NC II)	320 hours	
20.	Plumbing (NC I)	320 hours	
21.	Plumbing (NC II)	320 hours	Plumbing (NC I)
22.	Refrigeration and Air-Conditioning (Packaged Air-Conditioning Unit [PACU]/Commercial Refrigeration Equipment [CRE]) Servicing (NC III)	640 hours	Domestic Refrigeration and Air-conditioning (DOMRAC) Servicing (NC II)
23.	Shielded Metal Arc Welding (NC I)	320 hours	
24.	Shielded Metal Arc Welding (NC II)	320 hours	Shielded Metal Arc Welding (NC I)
25.	Tile Setting (NC II)	320 hours	
26.	Transmission Line Installation and Maintenance (NC II)	640 hours	Electrical Installation and Maintenance (NC II)

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL - TECHNICAL-VOCATIONAL LIVELIHOOD TRACK
INDUSTRIAL ARTS - GAS METAL ARC WELDING (GMAW) NC II
(320 hours)

INFORMATION, COMMUNICATIONS AND TECHNOLOGY (ICT)

	Specialization	Number of Hours	Pre-requisite
1.	Animation (NC II)	320 hours	
2.	Broadband Installation (Fixed Wireless Systems) (NC II)	160 hours	Computer Systems Servicing (NC II)
3.	Computer Programming (.Net Technology) (NC III) <i>updated based on TESDA Training Regulations published December 28, 2013</i>	320 hours	
4.	Computer Programming (Java) (NC III) <i>updated based on TESDA Training Regulations published December 28, 2013</i>	320 hours	
5.	Computer Programming (Oracle Database) (NC III) <i>updated based on TESDA Training Regulations published December 28, 2013</i>	320 hours	
6.	Computer Systems Servicing (NC II) <i>updated based on TESDA Training Regulations published December 28, 2007</i>	640 hours	
7.	Contact Center Services (NC II)	320 hours	
8.	Illustration (NC II)	320 hours	
9.	Medical Transcription (NC II)	320 hours	
10.	Technical Drafting (NC II)	320 hours	
11.	Telecom OSP and Subscriber Line Installation (Copper Cable/POTS and DSL) (NC II)	320 hours	Computer Systems Servicing (NC II)
12.	Telecom OSP Installation (Fiber Optic Cable) (NC II)	160 hours	Computer Systems Servicing (NC II)

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL - TECHNICAL-VOCATIONAL LIVELIHOOD TRACK
INDUSTRIAL ARTS - GAS METAL ARC WELDING (GMAW) NC II
(320 hours)

Prerequisite: Shielded Metal Arc Welding (SMAW) NC II

Course Description:

This course is designed to enhance the knowledge, skills and attitudes of students in Gas Metal Arc Welding (GMAW) in accordance with industry standards. It covers core competencies such as welding carbon steel plates (1G-4G) and pipes (2G-6G) using GMAW.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
Introduction				
<ol style="list-style-type: none"> 1. Basic concepts in Gas Metal Arc Welding (GMAW) 2. Relevance of the course 3. Career opportunities 	The learner demonstrates an understanding of the basic concepts, and underlying theories in Gas Metal Arc Welding (GMAW).	The learner independently demonstrates the common competencies in Gas Metal Arc Welding as prescribed by TESDA Training Regulations.	<ol style="list-style-type: none"> 1. Explain basic concepts in Gas Metal Arc Welding. 2. Discuss the relevance of the course. 3. Explore career opportunities in Gas Metal Arc Welding. 	
PERSONAL ENTREPRENEURIAL COMPETENCIES AND SKILLS (PECS)				
<ol style="list-style-type: none"> 1. Assessment of Personal Entrepreneurial Competencies and Skills (PECS) vis-à-vis a practicing entrepreneur/employee <ol style="list-style-type: none"> 1.1 Characteristics 1.2 Attributes 1.3 Lifestyle 1.4 Skills 1.5 Traits 2. Analysis of one's PECS 	The learner demonstrates an understanding of one's Personal Entrepreneurial Competencies and Skills (PECS).	The learner recognizes his/her Personal Entrepreneurial Competencies and Skills (PECS) and prepares a list of PECS of a practitioner/entrepreneur in GMAW.	LO 1. Recognize Personal Entrepreneurial Competencies and Skills (PECS) needed in GMAW <ol style="list-style-type: none"> 1.1 Assess one's PECS: characteristics, attributes, lifestyle, skills, and traits. 1.2 Assess practitioner's characteristics, attributes, lifestyle, skills, and traits. 1.3 Compare one's PECS with that of a practitioner /entrepreneur. 	TLE_ PECS9-12-00-1
ENVIRONMENT AND MARKET (EM)				
<ol style="list-style-type: none"> 1. Key concepts of Environment and Market 2. Products & services available 3. in the market 4. Differentiation of products and 5. services 6. Customers and their buying habits 7. Competition in the market 8. SWOT Analysis 	The learner demonstrates an understanding of the concepts <i>environment</i> and <i>market</i> that relate to a career choice in GMAW.	The learner independently generates a business idea based on the analyses of the environment and market in GMAW.	LO 1. Generate a business idea that relates with a career choice in GMAW. <ol style="list-style-type: none"> 1.1 Conduct SWOT analysis. 1.2 Identify the different products/services available in the market. 1.3 Compare different products/services in GMAW business. 1.4 Determine the profile potential customers. 1.5 Determine the profile potential competitors. 1.6 Generate potential business idea based on the SWOT analysis. 	TLE_ EM9-12-00-1

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL - TECHNICAL-VOCATIONAL LIVELIHOOD TRACK
INDUSTRIAL ARTS - GAS METAL ARC WELDING (GMAW) NC II
 (320 hours)

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
CORE COMPETENCIES				
LESSON 1: WELDING CARBON STEEL PLATES (WSPL)				
<ul style="list-style-type: none"> • Definition of Gas Metal Arc Welding (GMAW) • Welding principles and concepts (GMAW) • Parts and functions of parts GMAW • GMAW Equipment <ul style="list-style-type: none"> - Power sources and polarity • Welding accessories and installation procedures <ul style="list-style-type: none"> - Welding guns - Regulators and flow meters - Gas hoses and adaptors - Gas cylinder and gas heaters - Filter ,gas nozzle and insulators - Wire feeder and wire cutter - Contact tips - Cable liners and gas diffusers • Consumable Gases • Gas selection • GMAW welding variables <ul style="list-style-type: none"> - Current and voltage setting - Wire feed speed - Gas flow rates - Stick out length • Mode of metal transfer • Procedures in setting up GMAW welding equipment 	<p>The learner demonstrates an understanding of concepts and underlying principles in welding carbon steel plate using GMAW.</p>	<p>The learner independently performs proper setting up and welding on carbon steel plates using GMAW based on TESDA Training Regulations.</p>	<p>LO 1. Set-up welding equipment.</p> <ol style="list-style-type: none"> 1.1 Set-up welding machine in accordance with job requirements, welding procedures and specifications, technical drawings and manufacturer’s instructions. 1.2 Fine-tune or adjust current voltage, and wire feed settings consistent with job requirements to produce acceptable weld. 1.3 Lock spools firmly to the holder. 1.4 Adjust the rollers to correct tension. 1.5 Install gas tanks, purging hoses, dampers, flow meter, regulators, torches and guns where needed. 1.6 Complete the task without causing damage to the tools, equipment and materials and injury to self and others. 	<p>TLE_IAGMAW 9-12WSPL-Ia- d-1</p>

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL - TECHNICAL-VOCATIONAL LIVELIHOOD TRACK
INDUSTRIAL ARTS - GAS METAL ARC WELDING (GMAW) NC II
(320 hours)

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
<ul style="list-style-type: none"> • GMAW equipment Manufacturer’s manual • Occupational Health and Safety Standards 				
<ul style="list-style-type: none"> • Fitting up techniques and tolerances • Welding Procedure Specification (WPS) requirements <ul style="list-style-type: none"> - Welding techniques and procedure (1G) - Plate thickness (1.6mm and above) - Type of material - Type and size of electrode wire - Travel speed - Current setting (Polarity, amperage, voltage) - Backing materials - Modes of metal transfer - Joint preparation • Visual inspection techniques and standards • Essential of welding • Weld profile • Common weld defects, causes and remedies • Welding codes and standard • International welding codes and standards • Occupational Health and Safety Procedures 			<p>LO 2. Weld carbon steel plates in flat position. (1G)</p> <ul style="list-style-type: none"> 2.1 Perform root pass, subsequent/filling passes and capping in accordance with approved WPS and or client specifications. 2.2 Ensure that root pass and subsequent filling are clean and free from defects and discontinuities. 2.3 Maintain weld profile in accordance with WPS/industry standards. 2.4 Check and repair the weld, as required. 2.5 Perform the tasks following safety procedures. 	<p>TLE_IAGMAW 9-12WSPL-Id- i-2</p>

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL - TECHNICAL-VOCATIONAL LIVELIHOOD TRACK
INDUSTRIAL ARTS - GAS METAL ARC WELDING (GMAW) NC II
(320 hours)

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
<ul style="list-style-type: none"> • Fitting up techniques and tolerances • Welding Procedure Specification (WPS) requirements <ul style="list-style-type: none"> - Welding techniques and procedure (2G) - Plate thickness (1.6mm and above) - Type of material - Type and size of electrode wire - Travel speed - Current setting (Polarity, amperage, voltage) - Backing materials - Modes of metal transfer - Joint preparation • Visual inspection techniques and standards • Essential of welding • Weld profile • Common weld defects, causes and remedies • Welding codes and standard • International welding codes and standards • Occupational Health and Safety Procedures 			<p>LO 3. Weld carbon steel plates in horizontal position. (2G)</p> <p>3.1 Perform root pass, subsequent/filling passes and capping in accordance with approved WPS and or client specifications.</p> <p>3.2 Ensure that root pass and subsequent/filling pass are clean and free from defects and discontinuities.</p> <p>3.3 Maintain weld profile in accordance with WPS/industry standards.</p> <p>3.4 Check and repair the weld, as required.</p> <p>3.5 Perform the tasks following safety procedures.</p>	<p>TLE_IAGMAW 9-12WSPL-Ii-j-IIa-j-3</p>
<ul style="list-style-type: none"> • Fitting up techniques and tolerances • Welding Procedure Specification (WPS) requirements <ul style="list-style-type: none"> - Welding techniques and 			<p>LO 4. Weld carbon steel plates in vertical position (3G).</p> <p>4.1 Perform root pass, subsequent/filling passes and capping in accordance with approved WPS and or client specifications.</p> <p>4.2 Ensure that root pass and subsequent filling</p>	<p>TLE_IAGMAW 9-12WSPL-Ii-j-IIj-IIIa-f-4</p>

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL - TECHNICAL-VOCATIONAL LIVELIHOOD TRACK
INDUSTRIAL ARTS - GAS METAL ARC WELDING (GMAW) NC II
(320 hours)

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
<ul style="list-style-type: none"> procedure (3G) - Plate thickness (1.6mm and above) - Type of material - Type and size of electrode wire - Travel speed - Current setting (Polarity, amperage, voltage) - Backing materials - Modes of metal transfer - Joint preparation • Visual inspection techniques and standards • Essential of welding • Weld profile • Common weld defects, causes and remedies • Welding codes and standard • International welding codes and standards • Occupational Health and Safety Procedures 			<ul style="list-style-type: none"> are clean and free from defects and discontinuities. 4.3 Maintain weld profile in accordance with WPS/industry standards. 4.4 Check and repair the weld, as required. 4.5 Perform the tasks following safety procedures. 	
<ul style="list-style-type: none"> • Fitting up techniques and tolerances • Welding Procedure Specification (WPS) requirements <ul style="list-style-type: none"> - Welding techniques and procedure (4G) - Plate thickness (1.6mm and above) - Type of material - Type and size of electrode wire - Travel speed 			<p>LO 5. Weld carbon steel plates in overhead position.(4G)</p> <ul style="list-style-type: none"> 5.1 Perform root pass, subsequent/filling passes and capping in accordance with approved WPS and or client specifications. 5.2 Ensure that root pass and subsequent filling are clean and free from defects and discontinuities. 5.3 Maintain weld profile in accordance with WPS/industry standards. 5.4 Check and repair the weld, as required. 5.5 Perform the tasks following safety procedures. 	<p>TLE_IAGMAW 9-12WSPL- IIIg-j-IVa-h-5</p>

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL - TECHNICAL-VOCATIONAL LIVELIHOOD TRACK
INDUSTRIAL ARTS - GAS METAL ARC WELDING (GMAW) NC II
(320 hours)

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
<ul style="list-style-type: none"> - Current setting (Polarity, amperage, voltage) - Backing materials - Modes of metal transfer - Joint preparation • Visual inspection techniques and standards • Essential of welding • Weld profile • Common weld defects, causes and remedies • Welding codes and standard • International welding codes and standards • Occupational Health and Safety Procedures 				
LESSON 2: WELDING CARBON STEEL PIPES (WSPI)				
<ul style="list-style-type: none"> • Fitting up techniques and tolerances • Welding Procedure Specification (WPS) requirements <ul style="list-style-type: none"> - Welding techniques and procedure (2G) - Pipe thickness (1.6mm and above) - Type of material - Type and size of electrode wire - Travel speed - Current setting (Polarity, amperage, voltage) - Backing materials 	<p>The learner demonstrates an understanding of concepts and underlying principles in welding carbon steel pipes using GMAW.</p>	<p>The learner independently performs welding carbon steel pipes using GMAW based on TESDA Training Regulations.</p>	<p>LO 1. Weld carbon steel pipes in horizontal position. (2G)</p> <ol style="list-style-type: none"> 1.1 Perform root pass, subsequent/filling passes and capping in accordance with approved WPS and or client specifications. 1.2 Ensure that root pass and subsequent filling are clean and free from defects and discontinuities. 1.3 Maintain weld profile in accordance with WPS/industry standards. 1.4 Check and repair the weld, as required. 1.5 Perform the tasks following safety procedures. 	<p>TLE_IAGMAW 9-12WSPI-IVi-j-Ia-g-6</p>

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL - TECHNICAL-VOCATIONAL LIVELIHOOD TRACK
INDUSTRIAL ARTS - GAS METAL ARC WELDING (GMAW) NC II
(320 hours)

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
<ul style="list-style-type: none"> - Modes of metal transfer - Joint preparation • Visual inspection techniques and standards • Essential of welding • Weld profile • Common weld defects, causes and remedies • Welding codes and standard • International welding codes and standards • Occupational Health and Safety Procedures 				
<ul style="list-style-type: none"> • Fitting up techniques and tolerances • Welding Procedure Specification (WPS) requirements <ul style="list-style-type: none"> - Welding techniques and procedure (5G) - Pipe thickness (1.6mm and above) - Type of material - Type and size of electrode wire - Travel speed - Current setting (Polarity, amperage, voltage) - Backing materials - Modes of metal transfer - Joint preparation • Visual inspection techniques and standards • Essential of welding • Weld profile • Common weld defects, 			<p>LO 2. Weld carbon steel pipes in horizontal fixed position. (5G)</p> <ul style="list-style-type: none"> 2.1 Perform root pass, subsequent/filling passes and capping in accordance with approved WPS and or client specifications. 2.2 Ensure that root pass and subsequent filling are clean and free from defects and discontinuities. 2.3 Maintain weld profile in accordance with WPS/industry standards. 2.4 Check and repair the weld, as required. 2.5 Perform the tasks following safety procedures. 	<p>TLE_IAGMAW 9-12WSPI-Ig-j-IIa-j-IIIa-7</p>

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL - TECHNICAL-VOCATIONAL LIVELIHOOD TRACK
INDUSTRIAL ARTS - GAS METAL ARC WELDING (GMAW) NC II
(320 hours)

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
<ul style="list-style-type: none"> causes and remedies • Welding codes and standard • International welding codes and standards • Occupational Health and Safety Procedures 				
<ul style="list-style-type: none"> • Fitting up techniques and tolerances • Welding Procedure Specification (WPS) requirements <ul style="list-style-type: none"> - Welding techniques and procedure (6G) - Pipe thickness (1.6mm and above) - Type of material - Type and size of electrode wire - Travel speed - Current setting (Polarity, amperage, voltage) - Backing materials - Modes of metal transfer - Joint preparation • Visual inspection techniques and standards • Essential of welding • Weld profile • Common weld defects, causes and remedies • Welding codes and standard • International welding codes and standards • Occupational Health and Safety Procedures 			<p>LO 3. Weld carbon steel pipes in 45° fixed position. (6G).</p> <ul style="list-style-type: none"> 3.1 Perform root pass, subsequent/filling passes and capping in accordance with approved WPS and or client specifications. 3.2 Ensure that root pass and subsequent filling are clean and free from defects and discontinuities. 3.3 Maintain weld profile in accordance with WPS/industry standards. 3.4 Check and repair the weld, as required. 3.5 Perform the tasks following safety procedures. 	<p>TLE_IAGMAW 9-12WSPI- IIIa-j-IVa-j-8</p>

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL - TECHNICAL-VOCATIONAL LIVELIHOOD TRACK
INDUSTRIAL ARTS - GAS METAL ARC WELDING (GMAW) NC II
(320 hours)

RESOURCES			METHODOLOGY	ASSESSMENT METHOD
TOOLS	EQUIPMENT	MATERIALS		
<ul style="list-style-type: none"> • Set of box wrench • Welding mask • Chipping hammer • Steel brush • Dark glass • Clear glass • Weld gauge • Penlight • Dye penetrant (DPT) kit • Cutting / grinding disk • Carbon steel plates / pipes • Portable grinder • Shielding gases • MIG wire 	<ul style="list-style-type: none"> • GMAW/MIG welding machine complete with accessories • Oxy-acetylene cutting outfit • Welding booth • Welding table or jig <p>Personal Protective Equipment (PPE)</p> <ul style="list-style-type: none"> • Safety shoes • Safety goggles • Apron • Gloves • Leggings 	<ul style="list-style-type: none"> • Reference books • Manuals • Catalogs • Brochures • Modules/LEs • CDs/Video tapes • Arc welding manuals • Welding standards • Welding procedures specifications (WPS) 	<ul style="list-style-type: none"> • Modular • Demonstration • Lecture/Discussion • Dual training 	<ul style="list-style-type: none"> • Written examination • Demonstration of practical skills • Direct observation • Interview

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL - TECHNICAL-VOCATIONAL LIVELIHOOD TRACK
INDUSTRIAL ARTS - GAS METAL ARC WELDING (GMAW) NC II
(320 hours)

GLOSSARY

1. Base metal - the metal that is to be worked on welded
2. Stickout length - distance from the contact tip to the base metal
3. Weld bead - a deposit of filler metal from a single welding pass
4. Weld defect - an irregularity that spoils the weld appearance or impairs the effectiveness of the weld or weldment by causing weakness or failure
5. Weld line - the junction of weld metal and the base metal, or the junction of base metal parts when filler metal is not used
6. Weldment - an assembly or structure whose component parts are joined by welding
7. Welding - joining two metals by applying heat to melt and fuse them, with or without filler metal
8. Welding electrode - the current-carrying rod used to strike an arc between rod and metal
9. Welding rod - filler metal in the form of a rod or heavy wire
10. Welding torch - a gas mixing and burning tool for the welding of metal

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL - TECHNICAL-VOCATIONAL LIVELIHOOD TRACK
INDUSTRIAL ARTS - GAS METAL ARC WELDING (GMAW) NC II
(320 hours)

CODE BOOK LEGEND

Sample: **TLE_IAGMAW9-12WSPL-Ia-d-1**

LEGEND		SAMPLE		DOMAIN / COMPONENT	CODE
First Entry	Learning Area and Strand/ Subject or Specialization	Technology and Livelihood Education_ Industrial Arts Gas Metal Arc Welding (GMAW) NC II	TLE_IA GMAW 9-12	Welding Carbon Steel Plates	WSPL
	Grade Level	9/10/11/12		Welding Carbon Steel Pipes	WSPI
Uppercase Letter/s	Domain/ Content/ Component/ Topic	Welding Carbon Steel Plates	WSPL		
			-		
Roman Numeral <i>*Zero if no specific Quarter</i>	Quarter	First Quarter	I		
Lower case letter/s <i>*Put an en-dash (-) in between letters to indicate more than a specific week</i>	Week	Week one to four	a-d		
			-		
Arabic Number	Competency	Set-up welding equipment.	1		

Technology-Livelihood Education and Technical-Vocational Track specializations may be taken between Grades 9 to 12.

Schools may offer specializations from the four strands as long as the minimum number of hours for each specialization is met.

Please refer to the sample Curriculum Map on the next page for the number of semesters per Industrial Arts specialization and those that have pre-requisites. Curriculum Maps may be modified according to specializations offered by a school.

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL - TECHNICAL-VOCATIONAL LIVELIHOOD TRACK
INDUSTRIAL ARTS - GAS METAL ARC WELDING (GMAW) NC II
 (320 hours)

SAMPLE INDUSTRIAL ARTS CURRICULUM MAP** (as of May 2016)

GRADE 7/8 (EXPLORATORY)	GRADES 9-12			
EXPLORATORY	Automotive Servicing (NC I)* <small>updated based on TESDA Training Regulations published December</small>		8 sems	
	*Automotive Servicing (NC II)		8 sems	
	Motorcycle/Small Engine Servicing (NC II)	4 sems	Driving (NC II)	2 sems
	Electronic Products Assembly and Servicing (NC II)* <small>updated based on TESDA Training Regulations published December 28, 2013</small>		8 sems	
	*Mechatronics Servicing (NC II)		4 sems	
	*Instrumentation Control and Servicing (NC II)		4 sems	
	Electrical Installation and Maintenance (NC II)		8 sems	
	*Electrical Power Line Distribution Line Construction (NC II)		4 sems	
	*Transmission Line Installation and Maintenance (NC II)		8 sems	
	Machining (NC I)		8 sems	
	*Machining (NC II)		8 sems	
	Plumbing (NC I)	4 sems	*Plumbing (NC II)	4 sems
	Domestic Refrigeration and Air-conditioning Servicing (NC II)		8 sems	
	*Refrigeration and Air-conditioning Servicing (PACU/CRE) (NC III)		8 sems	
	Shielded Metal Arc Welding (NC I)	4 sems	*Shielded Metal Arc Welding (NC II)	4 sems
	*Gas Metal Arc Welding (GMAW) (NC II)		4 sems	
	*Gas Tungsten Arc Welding (GTAW) (NC II)		4 sems	
	Carpentry (NC II)		8 sems	
	*Carpentry (NC III)	4 sems	Construction Painting (NC II)	2 sems
	Furniture Making (Finishing) (NC II)		8 sems	
Masonry (NC II)	4 sems	Tile Setting (NC II)	4 sems	

* Please note that these subjects have pre-requisites mentioned in the CG.

+ CG updated based on new Training Regulations of TESDA.

Other specializations with no prerequisites may be taken up during these semesters.

Pre-requisites of the subjects to the right should be taken up during these semesters.

**This is just a sample. Schools make their own curriculum maps considering the specializations to be offered. Subjects may be taken up at any point during Grades 9-12.

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL - TECHNICAL-VOCATIONAL LIVELIHOOD TRACK
INDUSTRIAL ARTS - GAS METAL ARC WELDING (GMAW) NC II
(320 hours)

Reference:

Technical Education and Skills Development Authority-Qualification Standards Office. *Training Regulations for Gas Metal Arc Welding (GMAW) NC II*. Taguig City, Philippines: TESDA, 2007.