

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

Prerequisite: Shielded Metal Arc Welding (SMAW) NC II

Course Description:

This unit covers the skills, knowledge and attitudes required in setting up Gas Tungsten Arc Welding (GTAW) in carbon steel plates 1F-4F and 1G-4G positions and pipes in 2G, 5G and 6G positions using Gas Tungsten Arc Welding (GTAW) process.

| CONTENT | CONTENT STANDARD | PERFORMANCE STANDARD | LEARNING COMPETENCIES | CODE |
|---|--|--|---|--------------------------|
| Introduction 1. Basic concepts in Gas Tungsten Arc Welding (GTAW) 2. Relevance of the course 3. Career opportunities | The learner demonstrates an understanding of the basic concepts, and underlying theories in Gas Tungsten Arc Welding (GTAW). | The learner independently demonstrates the common competencies in Gas Tungsten Arc Welding (GTAW) as prescribed by TESDA Training Regulations. | 1. Explain basic concepts in Gas Tungsten Arc Welding (GTAW). 2. Discuss the relevance of the course. 3. Explore career opportunities in Gas Tungsten Arc Welding (GTAW). | |
| PERSONAL ENTREPRENEURIAL COMPETENCIES (PECS) | | | | |
| 1. Assessment of Personal Entrepreneurial Competencies and Skills (PECS) vis-à-vis a practicing entrepreneur/ employee 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 PECS and prepares a list of PECS of a practitioner/entrepreneur in GTAW. | LO 1. Recognize Personal Entrepreneurial Competencies and Skills (PECS) needed in Gas Tungsten Arc Welding (GTAW). 1.1 Assess one's PECS: characteristics, attributes, lifestyle, skills, and traits. 1.2 Assess practitioner's PECS: 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) | | | | |
| 1. Key concepts of Environment and Market 2. Products and services available in the market 3. Differentiation of products and services 4. Customers and their buying | The learner demonstrates an understanding of the concepts <i>environment</i> and <i>market</i> that relate to a career choice in GTAW. | The learner independently generates a business idea based on the analyses of the environment and market in GTAW. | LO 1. Generate a business idea that relates with a career choice in Gas Tungsten Arc Welding (GTAW). 1.1 Conduct SWOT analysis. 1.2 Identify the different products/services available in the market. 1.3 Compare different products/services in | TLE_EM9-12-00-1 |

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

| CONTENT | CONTENT STANDARD | PERFORMANCE STANDARD | LEARNING COMPETENCIES | CODE |
|--|---|---|--|----------------------------------|
| habits 5. Competition in the market SWOT Analysis | | | GTAW 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. | |
| LESSON 1: WELDING CARBON STEEL PLATES USING GTAW -1F (WCGF) | | | | |
| <ul style="list-style-type: none"> • Gas Tungsten Arc Welding Equipment (GTAW) <ul style="list-style-type: none"> - Power source - Gas supply equipment (argon /set) - GTAW torches according to ampere and accessories • Gas Tungsten Arc Welding (GTAW) consumables <ul style="list-style-type: none"> - Filler metals - Tungsten electrode types - Electrode preparation - Current types • Gases for Gas Tungsten Arc Welding (GTAW) • Gas Tungsten Arc Welding (GTAW) variables <ul style="list-style-type: none"> - Stick out - Gas nozzles - Flow meter • Setting-up and installation of Gas Tungsten Arc Welding (GTAW) equipment, accessories, welding positioners, jigs and fixtures and free heating equipment within allotted time in accordance with WPS. • Parts and functions of GTAW welding equipment • Power requirements and operating capacity of welding | The learner demonstrates an understanding of the concepts and underlying principles in welding carbon steel plate using GTAW. | The learner independently performs proper setting up and welding on carbon steel plates using GTAW based on TESDA Training Regulations. | LO 1. Setting-up of Gas Tungsten Arc Welding (GTAW) accessories based on Welding Procedure Specifications (WPS). 1.1 Set-up welding machine in accordance with job requirements, welding procedures and specifications, technical drawings and manufacturer’s instructions. 1.2 Wire up or set welding machine to the specifications or as recommended by manufacturer /WPS 1.3 Connect welding machine to an independent power supply. 1.4 Current, voltage, and filler rod settings are fine –tuned or adjusted consistent with job requirements to produce acceptable weld. 1.5 Task is completed without causing damage to the tools, equipment and materials and injury to self and others. | TLE_IAGTAW9-12WCGF-Ia-b-1 |

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

| CONTENT | CONTENT STANDARD | PERFORMANCE STANDARD | LEARNING COMPETENCIES | CODE |
|--|------------------|----------------------|--|---|
| <ul style="list-style-type: none"> machine and its accessories • Abnormalities and fine tuning of welding machine and accessories • Advantages and limitations of Gas Tungsten Arc Welding (GTAW) • Housekeeping and 5's practices | | | | |
| <ul style="list-style-type: none"> • Essentials of welding • Welding principles and concepts • Materials preparation • International welding standards and symbols. • Weld profile • Safe welding practices • Welding techniques and procedures • Weld defects | | | <p>LO 1. Weld Carbon Steel Plates (1F) using (GTAW)</p> <ul style="list-style-type: none"> 1.1 Perform welding of carbon steel plates in flat position (1F). 1.2 Maintain bead profile in accordance with WPS/ISO standards. 1.3 Maintain work angle of TIG torch and filler rod in performing fillet weld in flat position 1.4 Observe work angle of TIG torch and filler rod in accordance with ISO standards. 1.5 Attain smoothness of joint and uniformity of finished beads. 1.6 Achieve ripple to be regular in appearance. 1.7 Achieve the correct leg size in accordance with WPS. | <p>TLE_IAGTAW9-12WCGF-Ic-h-2</p> |
| <ul style="list-style-type: none"> • Essentials of welding • Welding principles and concepts • Materials preparation • International welding standards and symbols. • Weld profile • Safe welding practices • Welding techniques and procedures • Weld defects | | | <p>LO 2. Welding carbon steel plates in horizontal position (2F).</p> <ul style="list-style-type: none"> 2.1 Perform welding of carbon steel plates in horizontal position (2F). 2.2 Maintain bead profile in accordance with WPS/ISO standard. 2.3 Maintain work angle of TIG torch and filler rod in performing fillet weld in horizontal position 2.4 Observe work angle of TIG torch and filler rod in accordance with ISO standard. 2.5 Attain smoothness of joint and uniformity of finished beads. 2.6 Achieve ripple to be regular in appearance. 2.7 Achieve the correct leg size in accordance with WPS. | <p>TLE_IAGTAW9-12WCGF-Ii-j-IIa-e-3</p> |

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

| CONTENT | CONTENT STANDARD | PERFORMANCE STANDARD | LEARNING COMPETENCIES | CODE |
|--|--|---|--|---|
| <ul style="list-style-type: none"> • Essentials of welding • Welding principles and concepts • Materials preparation • International welding standards and symbols. • Weld profile • Safe welding practices • Welding techniques and procedures • Weld defects | | | <p>LO 3. Weld carbon steel plates in vertical position (3F).</p> <p>3.1 Perform welding of carbon steel plates in vertical position (3F).</p> <p>3.2 Maintain bead profile in accordance with WPS/ISO standard.</p> <p>3.3 Maintain work angle of TIG torch and filler rod in performing fillet weld in vertical position</p> <p>3.4 Observe work angle of TIG torch and filler rod in accordance with ISO standard.</p> <p>3.5 Attain smoothness of joint and uniformity of finished beads.</p> <p>3.6 Achieve ripple to be regular in appearance.</p> <p>3.7 Achieve the correct leg size in accordance with WPS.</p> | <p>TLE_IAGTAW9-12WCGF-IIe-j-IIIa-4</p> |
| <ul style="list-style-type: none"> • Essentials of welding • Welding principles and concepts • Materials preparation • International welding standards and symbols. • Weld profile • Safe welding practices • Welding techniques and procedures • Weld defects | | | <p>LO 4. Weld carbon steel plates in overhead position (4F).</p> <p>4.1 Perform welding of carbon steel plates in overhead position (4F).</p> <p>4.2 Maintain bead profile in accordance with WPS/ISO standard.</p> <p>4.3 Maintain work angle of TIG torch and filler rod in performing fillet weld in overhead position</p> <p>4.4 Observe work angle of TIG torch and filler rod in accordance with ISO standard.</p> <p>4.5 Attain smoothness of joint and uniformity of finished beads.</p> <p>4.6 Achieve ripple to be regular in appearance.</p> <p>4.7 Achieve the correct leg size in accordance with WPS.</p> | <p>TLE_IAGTAW9-12WCGF-IIIb-h-5</p> |
| LESSON 2: WELDING CARBON STEEL PLATES -1G (WCGG) | | | | |
| <ul style="list-style-type: none"> • Essentials of welding • Welding principles and concepts • Materials preparation • International welding standards and symbols. | <p>The learner demonstrates an understanding of the concepts and underlying principles in welding carbon steel plates.</p> | <p>The learner independently performs welding carbon steel plates based on TESDA Training Regulations</p> | <p>LO 1. Weld carbon steel plates in flat position (1G).</p> <p>1.1 Perform welding of carbon steel plates in flat position (1G).</p> <p>1.2 Maintain minimum of flush to base metal</p> | <p>TLE_IAGTAAW 9-12WCGG-IIIh-j-IVa-d-6</p> |

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

| CONTENT | CONTENT STANDARD | PERFORMANCE STANDARD | LEARNING COMPETENCIES | CODE |
|--|------------------|----------------------|---|---|
| <ul style="list-style-type: none"> • Weld profile <ul style="list-style-type: none"> - Bead profile a minimum flush to base metal - Ripple regular in appearance - Smoothness of joints - Uniformity of finish beads • Safe welding practices • Welding techniques and procedures • Weld defects | | | <p>and convexity not greater than 3mm in height, in accordance with WPS.</p> <p>1.3 Observe work angle of TIG torch and filler rod in accordance with ISO standard.</p> <p>1.4 Maintain work angle of TIG torch and filler rod in performing groove weld in flat position</p> <p>1.5 Maintain weld size not greater than 2mm for side lap and 3 mm for crown height 0.1 mm based on industry standard.</p> <p>1.6 Maintain weld of bead profile according to standard specification.</p> <p>1.7 Ensure that welding of base metal is free from weld defects.</p> | |
| <ul style="list-style-type: none"> • Essentials of welding • Welding principles and concepts • Materials preparation • International welding standards and symbols. • Weld profile <ul style="list-style-type: none"> - Bead profile a minimum flush to base metal - Ripple regular in appearance - Smoothness of joints - Uniformity of finish beads • Safe welding practices • Welding techniques and procedures • Weld defects | | | <p>LO 2. Weld carbon steel plates in horizontal position (2G).</p> <p>2.1 Perform welding of carbon steel plates in horizontal position (2G).</p> <p>2.2 Observe work angle of TIG torch and filler rod in accordance with ISO standard.</p> <p>2.3 Maintain work angle of TIG torch and filler rod in performing groove weld in horizontal position</p> <p>2.4 Maintain minimum of flush to base metal and convexity not greater than 3mm in height, in accordance with WPS.</p> <p>2.5 Maintain weld size not greater than 2mm for side lap and 3 mm for crown height 0.1 mm based on industry standard.</p> <p>2.6 Maintain weld of bead profile according to standard specification.</p> <p>2.7 Ensure that welding of base metal is free from weld defects.</p> | <p>TLE_IAGTAW9-12WCGG-IVe-j-Ia-7</p> |
| <ul style="list-style-type: none"> • Essentials of welding • Welding principles and concepts • Materials preparation • International welding standards and symbols. | | | <p>LO 3. Weld carbon steel plates in vertical position (3G).</p> <p>3.1 Perform welding of carbon steel plates in vertical position (3G).</p> <p>3.2 Observe work angle of TIG torch and filler</p> | <p>TLE_IAGTAW9-12WCGG-Ia-g-8</p> |

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

| CONTENT | CONTENT STANDARD | PERFORMANCE STANDARD | LEARNING COMPETENCIES | CODE |
|--|---|---|--|---|
| <ul style="list-style-type: none"> • Weld profile <ul style="list-style-type: none"> - Bead profile a minimum flush to base metal - Ripple regular in appearance - Smoothness of joints - Uniformity of finish beads • Safe welding practices • Welding techniques and procedures • Weld defects | | | <p>rod in accordance with ISO standard.</p> <p>3.3 Maintain work angle of TIG torch and filler rod in performing groove weld in vertical position</p> <p>3.4 Maintain minimum of flush to base metal and convexity not greater than 3mm in height, in accordance with WPS.</p> <p>3.5 Maintain weld size not greater than 2mm for side lap and 3 mm for crown height 0.1 mm based on industry standard.</p> <p>3.6 Maintain weld of bead profile according to standard specification.</p> <p>3.7 Ensure that welding of base metal is free from weld defects.</p> | |
| <ul style="list-style-type: none"> • Essentials of welding • Welding principles and concepts • Materials preparation • International welding standards and symbols. • Weld profile <ul style="list-style-type: none"> - Bead profile a minimum flush to base metal - Ripple regular in appearance - Smoothness of joints - Uniformity of finish beads • Safe welding practices • Welding techniques and procedures • Weld defects | | | <p>LO 4. Weld carbon steel plates in overhead position (4G).</p> <p>4.1 Perform welding of carbon steel plates in overhead position (4G).</p> <p>4.2 Observe work angle of TIG torch and filler rod in accordance with ISO standard.</p> <p>4.3 Maintain work angle of TIG torch and filler rod in performing groove weld in overhead position.</p> <p>4.4 Maintain minimum of flush to base metal and convexity not greater than 3mm in height, in accordance with WPS.</p> <p>4.5 Maintain weld size not greater than 2mm for side lap and 3 mm for crown height 0.1 mm based on industry standard.</p> <p>4.6 Maintain weld of bead profile according to standard specification.</p> <p>4.7 Ensure that welding of base metal is free from weld defects.</p> | <p>TLE_IAGTAW9-12WCGG-Ih-j-IIa-d-9</p> |
| LESSON 3: WELDING CARBON STEEL PIPES (WCSP) | | | | |
| <ul style="list-style-type: none"> • Essentials of welding • International welding codes and standards • Acceptable weld profiles | <p>The learner demonstrates an understanding of the concepts and underlying principles in welding</p> | <p>The learner independently performs welding carbon steel pipes based on TESDA Training Regulations.</p> | <p>LO 1. Weld carbon steel pipes in horizontal position (2G).</p> <p>1.1 Perform welding of carbon steel pipes in horizontal position (2G).</p> | <p>TLE_IAGTAW9-12WCSP-IIId-j-10</p> |

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

| CONTENT | CONTENT STANDARD | PERFORMANCE STANDARD | LEARNING COMPETENCIES | CODE |
|--|--------------------------------|----------------------|---|----------------------------------|
| <ul style="list-style-type: none"> • Weld defects, causes and remedies • Welding Procedure Specifications (WPS) • Welding techniques and procedures • Safe welding practices | carbon steel pipes using GTAW. | | 1.2 Observe work angle of TIG torch and filler rod in accordance with ISO standard. 1.3 Maintain work angle of TIG torch and filler rod in performing (2G) horizontal position on carbon steel pipe. 1.4 Maintain root penetration not exceeding allowable tolerances specified by welding codes/ standards on 1.4.1 Concavity 1.4.2 Convexity 1.4.3 Undercut 1.4.4 Excess penetration 1.4.5 Lack of fusion 1.4.6 Burn-through 1.4.7 Cracks 1.5 Deposit weld capping/ final pass not exceeding allowable tolerances specified by welding codes/standards on 1.5.1 Height of reinforcement 1.5.2 Under fill 1.5.3 Porosities 1.5.4 Undercut 1.5.5 Cracks 1.5.6 Cold laps 1.4 Maintain uniformity of bead ripples in accordance with welding standards. 1.5 Deposit stringer or layered beads in accordance with welding standards. 1.6 Finish welding visually acceptable in accordance with welding standards for: 1.6.1 Spatters 1.6.2 Arc strikes 1.6.3 Slag 1.6.4 Uniformity of beads | |
| <ul style="list-style-type: none"> • Essentials of welding • International welding codes and standards • Acceptable weld profiles | | | LO 2. Weld carbon steel pipes in horizontal fixed position (5G). 2.1 Perform welding of carbon steel pipes in horizontal fixed position (5G). | TLE_IAGTAW9-12WCSP-III-11 |

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

| CONTENT | CONTENT STANDARD | PERFORMANCE STANDARD | LEARNING COMPETENCIES | CODE |
|--|------------------|----------------------|--|---------------------------------|
| <ul style="list-style-type: none"> • Weld defects, causes and remedies • Welding procedure specifications (WPS) • Welding techniques and procedures • Safe welding practices | | | 2.2 Observe work angle of TIG torch and filler rod in accordance with ISO standard. 2.3 Maintain work angle of TIG torch and filler rod in performing (5G) horizontal fixed position on carbon steel pipe. 2.4 Maintain root penetration not exceeding allowable tolerances specified by welding codes/ standards on 2.4.1 Concavity 2.4.2 Convexity 2.4.3 Undercut 2.4.4 Excess penetration 2.4.5 Lack of fusion 2.4.6 Burn-through 2.4.7 Cracks 2.5 Deposit weld capping/ final pass not exceeding allowable tolerances specified by welding codes/standards on 2.5.1 Height of reinforcement 2.5.2 Under fill 2.5.3 Porosities 2.5.4 Undercut 2.5.5 Cracks 2.5.6 Cold laps 2.4 Maintain uniformity of bead ripples in accordance with welding standards. 2.5 Deposit stringer or layered beads in accordance with welding standards. 2.6 Finish welding as visually acceptable in accordance with welding standards for: 2.6.1 Spatters 2.6.2 Arc strikes 2.6.3 Slag 2.6.4 Uniformity of beads | |
| <ul style="list-style-type: none"> • Essentials of welding • International welding codes and standards • Acceptable weld profiles | | | LO 3. Weld carbon steel pipes in 45 degrees fixed position (6G). 3.1 Perform welding of carbon steel pipes in 45 degrees fixed position (6G). | TLE_IAGTAW9-12WCSP-IV-12 |

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

| CONTENT | CONTENT STANDARD | PERFORMANCE STANDARD | LEARNING COMPETENCIES | CODE |
|--|------------------|----------------------|--|------|
| <ul style="list-style-type: none"> • Weld defects, causes and remedies • Welding procedure specifications (WPS) • Welding techniques and procedures • Safe welding practices | | | <p>3.2 Observe work angle of TIG torch and filler rod in accordance with ISO standard.</p> <p>3.3 Maintain work angle of TIG torch and filler rod in performing (6G) 45 degrees fixed position on carbon steel pipe.</p> <p>3.4 Maintain root penetration not exceeding allowable tolerances specified by welding codes/ standards on</p> <p style="margin-left: 20px;">3.4.1 Concavity</p> <p style="margin-left: 20px;">3.4.2 Convexity</p> <p style="margin-left: 20px;">3.4.3 Undercut</p> <p style="margin-left: 20px;">3.4.4 Excess penetration</p> <p style="margin-left: 20px;">3.4.5 Lack of fusion</p> <p style="margin-left: 20px;">3.4.6 Burn-through</p> <p style="margin-left: 20px;">3.4.7 Cracks</p> <p>3.5 Deposit weld capping/ final pass not exceeding allowable tolerances specified by welding codes/standards on</p> <p style="margin-left: 20px;">3.5.1 Height of reinforcement</p> <p style="margin-left: 20px;">3.5.2 Under fill</p> <p style="margin-left: 20px;">3.5.3 Porosities</p> <p style="margin-left: 20px;">3.5.4 Undercut</p> <p style="margin-left: 20px;">3.5.5 Cracks</p> <p style="margin-left: 20px;">3.5.6 Cold laps</p> <p>3.4 Maintain uniformity of bead ripples in accordance with welding standards.</p> <p>3.5 Deposit stringer or layered beads in accordance with welding standards.</p> <p>3.6 Finish welding as visually acceptable in accordance with welding standards for:</p> <p style="margin-left: 20px;">3.6.1 Spatters</p> <p style="margin-left: 20px;">3.6.2 Arc strikes</p> <p style="margin-left: 20px;">3.6.3 Slag</p> <p style="margin-left: 20px;">3.6.4 Uniformity of beads</p> | |

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

| RESOURCES | | | METHODOLOGY | ASSESSMENT METHOD |
|--|---|--|---|---|
| TOOLS | EQUIPMENT | MATERIALS | | |
| <ul style="list-style-type: none"> • Set of box wrench • Welding mask/auto darkening welding shield • Chipping hammer • Steel brush • Dark glass • Clear glass • Weld gauge • Penlight • Dye penetrant (DPT) kit • Cutting / grinding disk • Carbon steel pipes and plates • Filler rod • Tungsten electrode • Argon • T.I.G. torch and accessories • Gas flow meter • Portable grinder | <ul style="list-style-type: none"> • DC welding machine complete with accessories • Welding booth • Welding table or jig <p>Personal protective equipment (PPE)</p> <ul style="list-style-type: none"> • Safety shoes • Safety goggles • Apron • T.I.G 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 • Self-paced learning | <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 TRACK AND SENIOR HIGH SCHOOL – TECHNICAL-VOCATIONAL LIVELIHOOD TRACK
INDUSTRIAL ARTS - GAS TUNGSTEN ARC WELDING NC II
(320 hours)

GLOSSARY

1. Arc length - the distance from the end of the electrode to the point where the arc makes contact with work surface.
2. Base metal - the metal to be welded or cut.
3. Flat position - the position of welding wherein welding is performed from the upper side of the joint and the face of the weld is approximately horizontal; sometimes called down hand welding a weld made in the groove between two members to be joined.
4. Fillet weld - the position of welding wherein welding is performed on the upper side of an approximately horizontal surface and against an approximately vertical surface or tee joint.
5. Groove weld - a weld made in the groove between two members to be joined.
6. Post heating - heat applied to the work after welding or cutting.
7. Preheating - the heat applied to the work prior to welding or cutting.
8. Shielded metal arc welding - an arc-welding process wherein coalescence is produced by heating with an electric arc between a covered metal electrode and the work. Shielding is obtained from decomposition of the electrode covering. Pressure is not used and filler metal is obtained from the electrode.
9. Stick out - distance from the nozzle to the tip of tungsten electrode.
10. TIG (Gas Tungsten Arc Welding) - is an arc welding wherein coalescence is produced by heating with an electric arc between a single tungsten (non-consumable) electrode and the work. Shielding is obtained from a gas or gas mixture (which contained an inert gas called argon).
11. Weld bead - a deposit of filler metal from a single welding pass.
12. Weld defect - an irregularity that spoils the weld appearance or impairs the effectiveness of the weld or weldment by causing weakness or failure .
13. Weld line - the junction of weld metal and the base metal, or the junction of base metal parts when filler metal is not used .
14. Weldment - an assembly or structure whose component parts are joined by welding .
15. Welding - joining two metals by applying heat to melt and fuse them, with or without filler metal.
16. Welding electrode - the current-carrying rod used to strike an arc between rod and metal.
17. Welding rod - filler metal in the form of a rod or heavy wire.

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

CODE BOOK LEGEND

Sample: **TLE_IAGTAW9-12WCGF-Ia-b-1**

| LEGEND | | SAMPLE | |
|---|---|--|---------------------------------|
| First Entry | Learning Area and Strand/ Subject or Specialization | Technology and Livelihood Education_ Industrial Arts Gas Tungsten Arc Welding (GTAW) NC II | TLE_IA GTAW 9-12 |
| | Grade Level | 9/10/11/12 | |
| Uppercase Letter/s | Domain/ Content/ Component/ Topic | Welding Carbon Steel Plates Using GTAW – 1F | WCGF |
| | | | - |
| 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 two | a-b |
| | | | - |
| Arabic Number | Competency | Setting-up Gas Tungsten Arc Welding (GTAW) accessories based on Welding Procedures Specifications (WPS). | 1 |

| DOMAIN / COMPONENT | CODE |
|---|------|
| Welding Carbon Steel Plates Using GTAW – 1F | WCGF |
| Welding Carbon Steel Plates – 1G | WCGG |
| Welding Carbon Steel Pipes | WCSP |

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 TRACK AND SENIOR HIGH SCHOOL – TECHNICAL-VOCATIONAL LIVELIHOOD TRACK
 INDUSTRIAL ARTS - GAS TUNGSTEN ARC WELDING NC II
 (320 hours)**

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

| GRADE 7/8 (EXPLORATORY) | | | | GRADES 9-12 | | | |
|-------------------------|--|--|-----------|---|---|---|-----------|
| | | | | | 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 |
| | | | 4 sems | Masonry (NC II) 4 sems | | Tile Setting (NC II) 4 sems | |

EXPLORATORY

* 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 TRACK AND SENIOR HIGH SCHOOL – TECHNICAL-VOCATIONAL LIVELIHOOD TRACK
INDUSTRIAL ARTS - GAS TUNGSTEN ARC WELDING NC II
(320 hours)

Reference:

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