K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD TRACK
INDUSTRIAL ARTS – SHIELDED METAL ARC WELDING (SMAW) (NC II)
(160 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) *updated based on TESDA Training Regulations published December 28, 2013*	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) *updated based on TESDA Training Regulations published December 28, 2013*	320 hours	
6.	Animal Production (Large Ruminants) (NC II) *updated based on TESDA Training Regulations published December 28, 2013*	320 hours	
7.	Animal Production (Swine) (NC II) *updated based on TESDA Training Regulations published December 28, 2013*	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	

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INDUSTRIAL ARTS – SHIELDED METAL ARC WELDING (SMAW) (NC II)
(160 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) *updated based on TESDA Training Regulations published December 28, 2013*	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) *updated based on TESDA Training Regulations published December 28, 2013*	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	

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INDUSTRIAL ARTS – SHIELDED METAL ARC WELDING (SMAW) (NC II)
(160 hours)

INDUSTRIAL ARTS

	Specialization	Number of Hours	Pre-requisite
1.	Automotive Servicing (NC I) *updated based on TESDA Training Regulations published December 28, 2013*	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) *updated based on TESDA Training Regulations published December 28, 2013*	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)

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INDUSTRIAL ARTS – SHIELDED METAL ARC WELDING (SMAW) (NC II)
(160 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) *updated based on TESDA Training Regulations published December 28, 2013*	320 hours	
4.	Computer Programming (Java) (NC III) *updated based on TESDA Training Regulations published December 28, 2013*	320 hours	
5.	Computer Programming (Oracle Database) (NC III) *updated based on TESDA Training Regulations published December 28, 2013*	320 hours	
6.	Computer Systems Servicing (NC II) *updated based on TESDA Training Regulations published December 28, 2007*	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)

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JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD TRACK
INDUSTRIAL ARTS – SHIELDED METAL ARC WELDING (SMAW) (NC II)
(160 hours)

Prerequisite: Shielded Metal Arc Welding (NC I)

Course Description:
This curriculum guide is a competency-based leading to TESDA qualification standard for National Level II Certificate (NC II). It covers competencies in **Shielded Metal Arc Welding** (SMAW) that a high school student should acquire. The content of this curriculum guide for Shielded Metal Arc Welding (SMAW) includes Personal Entrepreneurial Competencies (PECs), Environment and Market (EM), and Process and Delivery (PD).

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
Introduction 1. Core concepts and principles of Shielded Metal Arc Welding (SMAW) 2. Employment and business opportunities	The learner demonstrates an understanding of the concepts and underlying principles in Shielded Metal Arc Welding (SMAW).	The learner independently performs Shielded Metal Arc Welding (SMAW) processes based on market standards.	1. Explain the core concepts and principles of Shielded Metal Arc Welding (SMAW) 2. Explore job/entrepreneurial opportunities for a craftsman 3. Choose related courses to pursue	
PERFORM FILLET WELD ON CARBON STEEL PLATES (FW)				
1. Essentials of welding 2. International welding codes and standards 3. Acceptable weld profiles 4. Weld defects, causes and remedies 5. Welding Procedure Specifications (WPS) 6. Welding techniques and procedures 7. Safe welding practices			**LO 1. WELD CARBON STEEL PLATES IN VERTICAL POSITION (3F)** 1.1 Perform stringer or layered beads in accordance with welding standards 1.2 Observe uniformity of bead, ripples in accordance with welding standards 1.3 Observe weld capping/ final pass not exceeding allowable tolerances specified by welding codes/ standards on: 1.3.1 Concavity 1.3.2 Convexity 1.3.3 Height of reinforcement 1.3.4 Underfill 1.3.5 Porosities 1.3.6 Undercut 1.3.7 Cracks 1.3.8 Cold laps 1.4 Conducts visual inspection on the finished weldment in accordance with welding standards for	**TLE_IAAW9-12FW-Ia-IIj-3**

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
			1.4.1 Spatters 1.4.2 Arc strikes 1.4.3 Slag inclusion 1.4.4 Uniformity of beads 1.5 Use appropriate Personal Protective Equipment (PPE) 1.6 Perform proper housekeeping (5S)	
8. Essentials of welding 9. International welding codes and standards 10. Acceptable weld profiles 11. Weld defects, causes and remedies 12. Welding Procedure Specifications (WPS) 13. Welding techniques and procedures 14. Safe welding practices			**LO 2. WELD CARBON STEEL PLATES IN OVERHEAD POSITION (4F)** 1.1 Perform stringer or layered beads in accordance with welding standards 1.2 Observe uniformity of bead, ripples in accordance with welding standards 1.3 Observe weld capping/ final pass not exceeding allowable tolerances specified by welding codes/ standards on: 1.3.1 Concavity 1.3.2 Convexity 1.3.3 Height of reinforcement 1.3.4 Underfill 1.3.5 Porosities 1.3.6 Undercut 1.3.7 Cracks 1.3.8 Cold laps 1.4 Conducts visual inspection of the finished weldment in accordance with welding standards for 1.4.1 Spatters 1.4.2 Arc strikes 1.4.3 Slag inclusion 1.4.4 Uniformity of beads 1.5 Use appropriate Personal Protective Equipment (PPE) 1.6 Perform proper housekeeping (5S)	**TLE_IAAW9-12FW-IIIa-IVj-4**

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JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD TRACK
INDUSTRIAL ARTS – SHIELDED METAL ARC WELDING (SMAW) (NC II)
(160 hours)

Course Description:
This curriculum guide is competency-based leading to a TESDA qualification standard for National Level I Certificate (NC II). It covers competencies in **Shielded Metal Arc Welding** (SMAW) that a high school student should acquire. The content of this curriculum guide for Shielded Metal Arc Welding (SMAW) includes Personal Entrepreneurial Competencies (PECs), Environment and Market (EM), and Process and Delivery (PD).

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
Introduction 1. Core concepts and principles of Shielded Metal Arc Welding (SMAW) 2. Employment and business opportunities	The learner demonstrates an understanding of the concepts and underlying principles in Shielded Metal .Arc Welding (SMAW).	The learner independently performs Shielded Metal Arc Welding (SMAW) processes based on market standards.	1. Explain the core concepts and principles of Shielded Metal Arc Welding (SMAW). 2. Explore job/entrepreneurial opportunities for a craftsman. 3. Choose related courses to pursue	
PERFORM GROOVE WELDING ON CARBON STEEL PLATES (GW)				
1. Essentials of welding 2. International welding codes and standards 3. Acceptable weld profiles 4. Weld defects, causes and remedies 5. Welding Procedure Specifications (WPS) 6. Welding techniques and procedures 7. Safe welding practices			**LO 1. WELD CARBON STEEL PLATES IN FLAT POSITION (1G)** 1.1 Perform root pass with root penetration not exceeding the allowable tolerances 1.2 Check root penetration in accordance with acceptable standards 1.3 Perform stringer or layered beads in accordance with welding standards 1.4 Observe welding codes and standards on: 1.1.1 Undercut 1.1.2 Excess penetration 1.1.3 Lack of fusion 1.1.4 Burn-through 1.1.5 Cracks	**TLE_IAAW9-12GW-Ia-j-1**

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
			1.5 Observe weld capping/ final pass not exceeding allowable tolerances specified by welding codes/ standards on: 1.5.1 Height of reinforcement 1.5.2 Underfill 1.5.3 Porosities 1.5.4 Undercut 1.5.5 Cracks 1.5.6 Cold laps 1.6 Conducts visual inspection of the finished weldment 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 1.7 Use appropriate Personal Protective Equipment (PPE) 1.8 Perform proper housekeeping (5S)	
8. Essentials of welding 9. International welding codes and standards 10. Acceptable weld profiles 11. Weld defects, causes and remedies 12. Welding Procedure Specifications (WPS) 13. Welding techniques and procedures 14. Safe welding practices			**LO 2. WELD CARBON STEEL PLATES IN HORIZONTAL POSITION (2G)** 2.1 Perform root pass with root penetration not exceeding the allowable tolerances 2.2 Check root penetration in accordance with acceptable standards 2.3 Perform stringer or layered beads in accordance with welding standards 2.4 Observe welding codes and standards on: 2.4.1 Undercut 2.4.2 Excess penetration 2.4.3 Lack of fusion	**TLE_IAAW9-12GW-IIa-j-2**

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
			2.4.4 Burn-through 2.4.5 Cracks 2.5 Observe weld capping/ final pass not exceeding allowable tolerances specified by welding codes/ standards on: 2.5.1 Height of reinforcement 2.5.2 Underfill 2.5.3 Porosities 2.5.4 Undercut 2.5.5 Cracks 2.5.6 Cold laps 2.6 Conducts visual inspection of the finished weldment 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 2.7 Use appropriate Personal Protective Equipment (PPE) 2.8 Perform proper housekeeping (5S)	
15. Essentials of welding 16. International welding codes and standards 17. Acceptable weld profiles 18. Weld defects, causes and remedies 19. Welding Procedure Specifications (WPS)			**LO 3. WELD CARBON STEEL PLATES IN VERTICAL POSITION (3G)** 3.1 Perform root pass with root penetration not exceeding the allowable tolerances 3.2 Check root penetration in accordance with acceptable standards 3.3 Perform stringer or layered beads in accordance with welding standards 3.4 Observe welding codes and standard on 3.4.1 Undercut	**TLE_IAAW9-12GW-IIIa-IVj-3**

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
20. Welding techniques and procedures 21. Safe welding practices			3.4.2 Excess penetration 3.4.3 Lack of fusion 3.4.4 Burn-through 3.4.5 Cracks 3.5 Observe weld capping/ final pass not exceeding allowable tolerances specified by welding codes/ standards on: 3.5.1 Height of reinforcement 3.5.2 Underfill 3.5.3 Porosities 3.5.4 Undercut 3.5.5 Cracks 3.5.6 Cold laps 3.6 Conducts visual inspection on the finished weldment in accordance with welding standards for 3.6.1 Spatters 3.6.2 Arc strikes 3.6.3 Slag 3.6.4 Uniformity of beads 3.7 Use appropriate Personal Protective Equipment (PPE) 3.8 Perform proper housekeeping (5S)	

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INDUSTRIAL ARTS – SHIELDED METAL ARC WELDING (SMAW) (NC II)
(160 hours)
Code Book Legend

Sample: TLE_IAAW9-12FW-Ia-IIj-3

LEGEND		SAMPLE	
First Entry	Learning Area and Strand/ Subject or Specialization	Technology and Livelihood Education_Industrial Arts Shielded Metal Arc Welding	**TLE_IA AW 9-12**
	Grade Level	Grade 9/10/11/12	
Uppercase Letter/s	Domain/Content/ Component/ Topic	Perform Fillet Weld on Carbon Steel Plates	**FW**
			-
Roman Numeral **Zero if no specific quarter*	Quarter	First to Second Quarter	**I-II**
Lowercase Letter/s **Put a hyphen (-) in between letters to indicate more than a specific week*	Week	Week One to Ten	**a-j**
			-
Arabic Number	Competency	Weld Carbon Steel Plates in Vertical Position	**3**

DOMAIN/ COMPONENT	CODE
Perform Fillet Weld on Carbon Steel Plates	FW
Perform Groove Welding on Carbon Steel Plates	GW

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.

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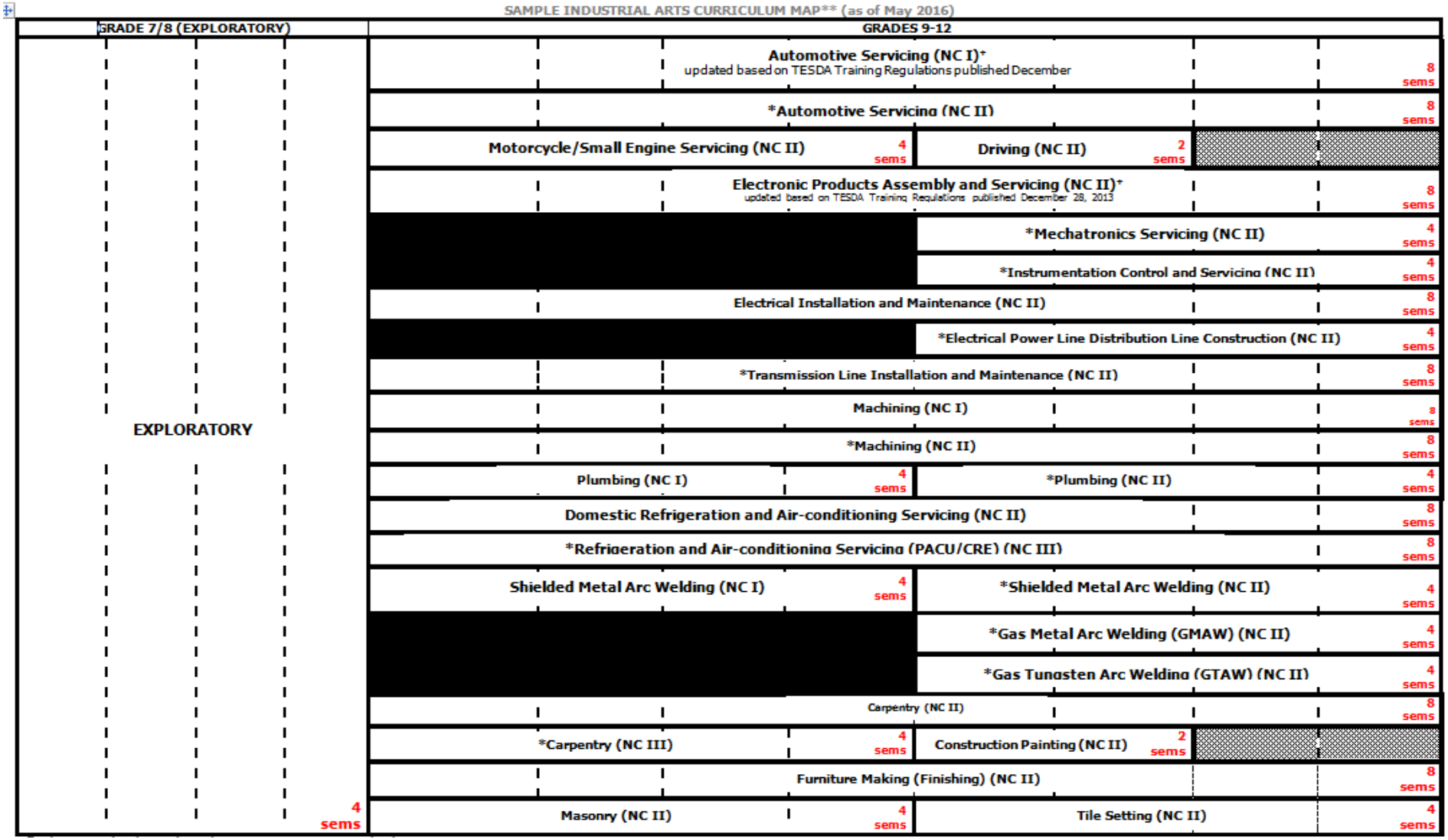
INDUSTRIAL ARTS – SHIELDED METAL ARC WELDING (SMAW) (NC II)
(160 hours)

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



* 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 <u>sample</u>. Schools make their own curriculum maps considering the specializations to be offered. Subjects may be taken up at any point during Grades 9-12.**

Reference:

Technical Education and Skills Development Authority (TESDA). *Shielded Metal Arc Welding (SMAW) NCI & II.* Compiled by the Qualifications and Standards Office. Series 2011. Taguig City: Philippines. TESDA, 2011.