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 I)
(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) *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	

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 I)
(320 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)

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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INDUSTRIAL ARTS – SHIELDED METAL ARC WELDING (SMAW) (NC I)
(320 hours)
Grade 7/ 8 (Exploratory)

Course Description:
This is an exploratory and introductory course which leads to a **Shielded Metal Arc Welding** National Certificate Level II (NC II). It covers **four** common competencies that the **Grade 7/Grade 8** Technology and Livelihood Education (TLE) student ought to possess: (1) using tools, equipment and paraphernalia; (2) performing mensuration and calculation; (3) practicing Occupational Health and Safety (OHS) procedures; and (4) interpreting technical drawing and plans.

The preliminaries of this exploratory course include the following: (1) discussion on the relevance of the course, (2) explanation of key concepts relative to the course, and (3) exploration of career opportunities.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
Introduction 1. Basic concepts in Shield Metal Arc Welding 2. Relevance of the course 3. Career opportunities	The learner demonstrates an understanding of the basic concepts, and underlying theories in shield metal arc welding.	The learner independently demonstrates the common competencies in shield metal arc welding as prescribed by TESDA Training Regulations..	1. Explain basic concepts in shield metal arc welding 2. Discuss the relevance of the course 3. Explore career opportunities in shield metal arc welding		
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 Personal Entrepreneurial Competencies and Skills (PeCS) and prepares a list of PeCS of a practitioner/entrepreneur in SMAW.	**LO 1. Recognize Personal Entrepreneurial Competencies and Skills (PeCS) needed in SMAW** 1.1 Assess one's PeCS: characteristics, attributes, lifestyle, skills, traits 1.2 Assess practitioner's: characteristics, attributes, lifestyle, skills, traits 1.3 Compare one's PeCS with that of a practitioner /entrepreneur	**TLE_PECS7/8-00-1**	

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
ENVIRONMENT AND MARKET (EM)					
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 *environment* and *market* that relate to a career choice in SMAW.	The learner independently generates a business idea based on the analyses of the environment and market in SMAW.	**LO 1. Generate a business idea that relates with a career choice in SMAW** 1.1 Conduct SWOT analysis 1.2 Identify the different products/services available in the market 1.3 Compare different products/services in SMAW 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_EM7/8-00-1**	
LESSON 1: USE BASIC HAND TOOLS AND EQUIPMENT (UT)					
1. Welding hand tools and equipment 2. Maintenance of hand tools 2.1 Cleaning 2.2 Lubricating 2.3 Tightening 2.4 Simple tool repair 2.5 Hand sharpening 3. Storage of hand tools	The learner demonstrates an understanding of the preparation of SMAW materials and tools.	The learner independently prepares appropriate SMAW materials and tools based on industry standards.	**LO 1. Identify and select materials and tools** 1.1 Manipulate the tools and materials in a job/task	**TLE_IAAW7/8UT-0a-1**	1. T.H.E III Industrial Technology Metalworks I. 1993. pp. 67-75.
			LO 2. Request appropriate materials and tools 2.1. Accomplish the different forms needed in making requests for materials and tools	**TLE_IAAW7/8UT-0a-b-2**	

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
			LO 3. Receive and inspect materials and tools 3.1. Accomplish the different forms in receiving materials and tools	**TLE_IAAW7/8UT-0c-3**	
LESSON 2: PERFORM MENSURATION AND CALCULATION (MC)					
1. Four fundamental operations 1.1 Subtraction 1.2 Addition 1.3 Multiplication 1.4 Division 2. Conversion of units 3. System of measurement 4. Ratio and proportion 5. Area and volume calculation	The learner demonstrates an understanding of concepts and underlying principles in performing measurements and calculations.	The learner independently performs accurate measurements and calculation based on given tasks.	**LO 1. Select measuring instruments** 1.1 Manipulate the measuring tool for a specified task	**TLE_IAAW7/8MC-0d-1**	1. T.H.E III Industrial Technology Metalworks I. 1993. pp. 5-9.
			LO 2. Carry out measurements and calculations 2.1 Measure and calculate the dimensions of a specific object	**TLE_IAAW7/8MC-0d-e-2**	
LESSON 3: APPLY SAFETY PRACTICES (OS)					
1. Occupational hazard and safety procedures 2. Sign & symbols 3. Occupational health and safety 4. Personal protective equipment (PPE)	The learner demonstrates an understanding of the concepts and underlying principles in OHS procedures.	The learner independently identifies hazards correctly in accordance with OHS procedures.	**LO 1. Identify hazards and risks** 1.1 Observing safety work habits in the work place 1.2 Preventing hazards in the workplace	**TLE_IAAW7/8OS-0f-1**	1. T.H.E III Industrial Technology Metalworks I. 1993. p. 9.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
5. Safe handling of tools, equipment and materials 6. First Aid			**LO 2. Evaluate hazards and risks** 2.1 Identify work hazards in the workplace 2.2 Make a plan of action for the identified hazards	**TLE_IAAW7/8OS-0f-2**	
			LO 3. Control hazards and risks 3.1 Demonstrate the use of PPEs in the workplace 3.2 Enumerate the benefits of observing safety procedure in the workplace	**TLE_IAAW7/8OS-0g-3**	
LESSON 4: MAINTAIN TOOLS AND EQUIPMENT (MT)					
1. Routine maintenance 1.1 Lubricating 1.2 Tightening 1.3 Simple tool repair 1.4 Hand tools sharpening 1.5 Cleaning 2. Proper storage of hand tools 3. Proper housekeeping (5S)	The learner demonstrates an understanding of concepts and underlying principles in the maintenance of SMAW tools and equipment.	The learner independently performs proper maintenance of SMAW tools and equipment based on industry standards.	**LO 1. Check condition of tools and equipment** 1.1 Functional and non-functional tools are labeled	**TLE_IAAW7/8MT-0h-1**	
			LO 2. Perform basic preventive maintenance 2.1 Maintenance of tools is done regularly	**TLE_IAAW7/8MT-0i-2**	
			LO 3. Store tools and equipment 3.1 Tools are stored safely in appropriate locations in accordance with manufacturer specifications or standard operating procedure	**TLE_IAAW7/8MT-0i-3**	

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
LESSON 5: INTERPRET PLANS AND DRAWINGS (ID)					
1. Alphabet of lines	The learner demonstrates an understanding of the concepts and underlying principles in interpreting simple technical drawings in SMAW.	The learner independently reads and interprets simple technical drawings.	**LO 1. Analyze signs, symbols and data** 1.1 Determine appropriate welding materials based on technical drawings	**TLE_IAAW7/8ID-0i-j-1**	
			LO 2. Interpret technical drawings 2.1. Necessary tool, materials and equipment are identified according to plans	**TLE_IAAW7/8ID-0i-j-2**	

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INDUSTRIAL ARTS – SHIELDED METAL ARC WELDING (SMAW) (NC I)
(320 hours)

Course Description:
This is a specialization course which leads to a **SMAW** Certificate Level I (NC I). It covers one (1) core competency that a high school student ought to possess,--namely, performing fillet welding on carbon steel plates.

The preliminary of this introduction which leads to specialization include the following: (1) discussion on the relevance of the course, (2) explanation of key concepts relative to the course, and (3) exploration of career opportunities.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
Introduction 1. Basic principles of arc welding 2. Relevance of the course 3. Career opportunities	The learner demonstrates an understanding of the basic principles of arc welding.	The learner independently demonstrates core competencies in introduction to SMAW prescribed by TESDA Training Regulations..	1. Explain basic arc welding 2. Discuss the relevance of the course 3. Explore on opportunities for SMAW servicing as a career		
PERSONAL ENTREPRENEURIAL COMPETENCIES (PeCS)					
1. Assessment of Personal Competencies and Skills (PeCS) vis-à-vis a practicing entrepreneur/ employee in locality/town. 1.1 Characteristics 1.2 Attributes 1.3 Lifestyle 1.4 Skills 1.5 Traits 2. Analysis of PeCS in relation to a practitioner 3. Align, strengthen and develop ones PeCS based on the results	The learner demonstrates an understanding of one's Personal Competencies and Skills (PeCS) in SMAW.	The learner recognizes his/her Personal Entrepreneurial Competencies and Skills (PeCS) and prepares an activity plan that aligns with that of a practitioner/entrepreneur in SMAW	**LO 1. Recognize Personal Entrepreneurial Competencies and Skills (PeCS) needed in SMAW** 1.1 Assess one's PeCS: characteristics, attributes, lifestyle, skills, traits 1.2 Assess practitioner's: characteristics, attributes, lifestyle, skills, traits 1.3 Compare one's PECSS with that of a practitioner /entrepreneur 1.4 Align one's PECSS with that of a practitioner/entrepreneur	**TLE_PECS9-12-I0-1**	

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
ENVIRONMENT AND MARKET (EM)					
Market (Town) 1. Key concepts of Environment and Market 2. Players in the Market (Competitors) 3. Products & services available in the market	The learner demonstrates an understanding of the concepts *environment* and *market* in SMAW, particularly in one's town/municipality.	The learner independently creates a business vicinity map reflective of the potential SMAW market within the locality/town.	**LO 1. Recognize and understand the market in SMAW** 1.1 Identify the players/ competitors within the town 1.2 Identify the different products/services available in the market	**TLE_EM9-12-I0-1**	
Market (Customer) 4. Key concepts of Identifying and Understanding the Consumer 5. Consumer Analysis through: 5.1 Observation 5.2 Interviews 5.3 Focus group discussion (FGD) 5.4 Survey			**LO 2. Recognize the potential customer/market in SMAW** 2.1 Identify profile of potential customers 2.2 Identify the customer's needs and wants through consumer analysis 2.3 Conduct consumer/market analysis	**TLE_EM9-12-II0-2**	
6. Generating Business Idea 6.1 Key concepts in Generating Business Ideas 6.2 Knowledge & Skills, Passions, Interests 6.3 new applications 6.4 Irritants 6.5 Striking ideas (new concept) 6.6 Serendipity Walk			**LO 3. Create new business ideas in SMAW by using various techniques** 3.1 Explore ways of generating business idea from ones' own characteristics/attributes 3.2 Generate business ideas using product innovation from irritants, trends and emerging needs 3.3 Generate business ideas using Serendipity Walk	**TLE_EM9-12-III0-IV0-3**	

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INDUSTRIAL ARTS – SHIELDED METAL ARC WELDING (SMAW) (NC I)
(320 hours)

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
PREPARE WELD MATERIALS (WM)					
1. Parts and function of cutting equipment 2. Procedures in setting-up cutting equipment 3. Procedures in checking the accuracy of cutting equipment 4. Occupational health and safety standards			**LO 1. Set-up cutting equipment** 1.1 Set-up cutting equipment in conformity with the occupational health and safety standards 1.2 Check cutting equipment fittings, connection, and power source in accordance with workplace procedure	**TLE_IAAW9-12WM-Ia-b-1**	1. T.H.E IV Industrial Technology Metalworks II. 1994. pp. 15-18.
5. Cutting operation procedures 6. Oxy-acetylene gas cutting equipment (manual and automatic) 7. Occupational health and safety standards			**LO 2. Cut and prepare edge of materials** 2.1 Cut materials according to specified dimensions/specifications 2.2 Prepare edge of materials according to specified dimensions/specifications	**TLE_IAAW9-12WM-Ic-d-2**	1. T.H.E IV Industrial Technology Metalworks II. 1994. pp. 19-21.
8. Procedures and techniques of preparing plates edges for welding 9. Equipment and tools for preparing plates edges 10. Occupational health and safety standards			**LO 3. Clean surfaces and edges** 3.1 Clean surfaces and edges based on the job requirements 3.2 Use correct tools and equipment for cleaning surfaces and edges in accordance with the job requirements 3.3 Use appropriate Personal Protective Equipment (PPE) 3.4 Perform proper housekeeping (5S)	**TLE_IAAW9-12WM-Ie-3**	

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
11. Maintenance of electrode/welding rods 12. Occupational health and safety standards 13. Electrodes specification and its characteristics 14. Consumable gases			**LO 4. Prepare welding consumables** 4.1 Identify welding electrodes according to classification and specifications 4.2 Maintain and keep electrodes in electrode oven based on prescribed temperature 4.3 Prepare specified consumable gases based on job requirements 4.4 Select correct materials in accordance with job requirements	**TLE_IAAW9-12WM-If-4**	1. T.H.E III Industrial Technology Metalworks I. 1993. pp. 75-81.
15. Procedures and techniques in checking protective equipment 16. Safe working practices and handling of protective equipment 17. Occupational health and safety procedures			**LO 5. Prepare welding protective equipment** 5.1 Prepare PPE in accordance with occupational health and safety standards 5.2 Check welding protective equipment in accordance with safety procedures	**TLE_IAAW9-12WM-Ig-5**	1. T.H.E IV Industrial Technology Metalworks II. 1994. pp. 125-129.
SET-UP WELDING EQUIPMENT (SW)					
1. Parts and functions of Shielded Metal Arc Welding (SMAW) 2. Procedures in setting-up of welding machine 3. Types of welding power source 4. AC power source 5. DC power source 6. AC+DC power source			**LO 1. Set-up welding machine** 1.1 Identify welding machine parts based on manufacturer's manual 1.2 Perform proper setting of welding machine according to manufacturer's manual	**TLE_IAAW9-12SW-Ih-1**	1. T.H.E III Industrial Technology Metalworks I. 1993. pp. 87, 93.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
7. Functions of welding cables 8. Procedure in setting up of welding cables/accessories			**LO 2. Set-up welding accessories** 2.1 Identify welding cables/wires and other accessories based on functions and uses 2.2 Perform setting/connecting of cables and other accessories in accordance with manufacturer's manual	**TLE_IAAW9-12SW-Ii-2**	
9. Types of welding positioners, jigs, and fixtures 10. Different kinds of jigs and fixtures 11. Uses and function of welding positioners, jigs, and fixtures 12. Strategic weld locations and places			**LO 3. Set-up welding positioners, jigs and fixtures** 3.1 Identify welding positioner, jigs and fixtures according to job requirements 3.2 Determine the location for setting up the welding positioner, jigs and fixtures 3.3 Set-up welding positioner, jigs and fixtures in conformity with job requirement 3.4 Observe safety practices in setting up welding positioner, jigs and fixtures	**TLE_IAAW9-12SW-Ij-3**	
LAY OUT BEADS ON CARBON STEEL PLATES (LB)					
1. Procedure in striking an arc 2. Methods of striking an arc 3. Appropriate electrode specification			**LO 1. Strike an arc** 1.1 Identify the methods of striking an arc 1.2 Apply the process of striking an arc according to welding procedures and standard	**TLE_IAAW9-12LB-IIa-e-1**	1. T.H.E III Industrial Technology Metalworks I. 1993. pp. 89-90.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
4. Essentials of welding 5. International welding codes and standards 6. Acceptable weld profiles 7. Weld defects, causes, and remedies 8. Welding Procedure Specifications (WPS) 9. Welding techniques and procedure 10. Safe welding practices			**LO 2. Deposit straight beads** 2.1 Perform stringer or straight beads in accordance with welding standards 2.2 Check uniformity of bead ripples in accordance with welding standards 2.3 Perform finished weldment based on acceptable standards for: 2.3.1 spatters 2.3.2 slag 2.3.3 uniformity of beads 2.4 Use appropriate Personal Protective Equipment (PPE) 2.5 Perform proper housekeeping (5S)	**TLE_IAAW9-12LB-IIf-j-2**	1. T.H.E III Industrial Technology Metalworks I. 1993. pp. 90-93.
FIT UP WELD MATERIALS (FW)					
1. Kinds of tacking 2. Welding procedure standard requirement 3. Codes and specification			**LO 1. Perform tack welding** 1.1 Prepare metals for tacking based on acceptable welding requirements 1.2 Perform tack welding in accordance with the welding procedures 1.3 Use appropriate Personal Protective Equipment (PPE) 1.4 Perform proper housekeeping (5S)	**TLE_IAAW9-12FW-IIIa-1**	
4. Essentials of welding 5. International welding codes and standards 6. Acceptable weld profiles			**LO 2. Weld butt joint (close) in flat and horizontal position** 2.1 Perform stringer beads in accordance with welding standard	**TLE_IAAW9-12FW-IIIb-f-2**	

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
7. Weld defects, causes and remedies 8. Welding Procedure Specifications (WPS) 9. Welding techniques and procedure 10. Safe welding practices			2.2 Check uniformity of bead ripples in accordance with welding standards 2.3 Perform inspection on the finished weldment based on acceptable standard 2.4 Use appropriate Personal Protective Equipment (PPE) 2.5 Perform proper housekeeping (5S)		
11. Essentials of welding 12. International welding codes and standards 13. Acceptable weld profiles 14. Weld defects, causes and remedies 15. Welding Procedure Specifications (WPS) 16. Welding techniques and procedure 17. Safe welding practices			**LO 3. Weld butt joint (open) in flat and horizontal position** 3.1 Perform weldment in accordance with welding standards for: 3.1.1 Spatters 3.1.2 Slag 3.1.3 Uniformity of beads 3.2 Deposit stringer or layered beads in accordance with welding standards 3.3 Check uniformity of bead ripples in accordance with welding standards 3.4 Perform inspection on the finished weldment based on acceptable standard 3.5 Use appropriate Personal Protective Equipment (PPE) 3.6 Perform proper housekeeping (5S)	**TLE_IAAW9-12FW-IIIg-j-3**	1. T.H.E III Industrial Technology Metalworks I. 1993. pp. 101-102.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
REPAIR WELDS (RW)					
1. Types of welding defects 2. Procedure in locating weld defects 3. Weld defects identification			**LO 1. Mark/locate weld defects** 1.1 Identify the different welding defects, problems and remedies 1.2 Perform procedures in locating weld defects 1.3 Determine location of weld defects 1.4 Mark weld defects for repair in accordance with job requirements	**TLE_IAAW9-12RW-IVa-1**	1. T.H.E IV Industrial Technology Metalworks II. 1994. pp. 132-133.
4. Tools and equipment and their uses 5. Procedures in checking tools and equipment			**LO 2. Prepare tools and equipment** 2.1 Prepare welding tools, equipment and accessories 2.2 Check welding tools, equipment and accessories based on manufacturers manual	**TLE_IAAW9-12RW-IVb-2**	1. T.H.E IV Industrial Technology Metalworks II. 1994. pp. 119-125.
6. Dye- penetrant testing principle and applications 7. Procedures of dye penetrant testing 8. Weld defects removal and excavation			**LO 3. Remove weld defects** 3.1 Remove/excavate weld defects in accordance with welding procedure 3.2 Minimize removal of non-defective welds 3.3 Perform visual and dye-penetrant tests to verify the extent of the removal of defects	**TLE_IAAW9-12RW-IVc-f-3**	

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
9. Rectifying weld defects 10. Re-welding procedures 11. Visual inspection of weld			**LO 4. Perform re-welding.** 4.1 Perform re-welding in accordance with repair 4.2 Visually check welding for re-welding acceptability 4.3 Avoid weld defects/damages during re-welding.	**TLE_IAAW9-12RW-IVg-j-4**	

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 I)
(320 hours)

Course Description:
This is a specialization course which leads to a **SMAW** Certificate Level I (NC I). It covers one (1) core competency that a high school student ought to possess,--namely, performing fillet welding on carbon steel plates.

The preliminary of this introduction which leads to specialization include the following: (1) discussion on the relevance of the course, (2) explanation of key concepts relative to the course, and (3) exploration of career opportunities.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
Introduction 1. Basic principles of arc welding 2. Relevance of the course 3. Career opportunities	The learner demonstrates an understanding of the basic principles of arc welding.	The learner independently demonstrates the core competency in the introduction to SMAW as prescribed by TESDA Training Regulations.	1. Explain basic arc welding 2. Discuss the relevance of the course 3. Explore career opportunities in SMAW		
PERSONAL ENTREPRENEURIAL COMPETENCIES (PeCS)					
1. Assessment of Personal Competencies and Skills (PeCS) vis-à-vis a practicing entrepreneur/employee in a province. 1.1 Characteristics 1.2 Attributes 1.3 Lifestyle 1.4 Skills 1.5 Traits 2. Analysis of PeCS in relation to a practitioner 3. Strengthening and further development of one's PeCS	The learner demonstrates an understanding of one's Personal Competencies and Skills (PeCS) in SMAW.	The learner independently creates a plan of action that strengthens/ further develops one's PeCS in SMAW.	**LO 1. Develop and strengthen personal competencies and skills (PeCS) needed SMAW** 1.1 Identify areas for improvement, development and growth 1.2 Align one's PeCS according to his/her business/career choice 1.3 Create a plan of action that ensures success of his/her business/career choice	**TLE_PECS9-12-I0-8**	

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INDUSTRIAL ARTS – SHIELDED METAL ARC WELDING (SMAW) (NC I)
(320 hours)

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
ENVIRONMENT AND MARKET (EM)					
1. Product Development 2. Key concepts in developing a product 3. Finding Value 4. Innovation 4.1 Unique Selling 4.2 Proposition (USP)	The learner demonstrates an understanding of the concepts *environment* and *market* in SMAW, particularly in one's town/municipality.	The learner independently creates a business vicinity map reflective of the potential SMAW market within the locality/town.	**LO 1. Develop a product/ service in SMAW** 1.1 Identify what is of "Value" to the customer 1.2 Identify the customer 1.3 Explain what makes a product unique and competitive 1.4 Apply creative and innovative techniques to develop marketable product 1.5 Employ a Unique Selling Proposition (USP) to the product/service	**TLE_EM9-12-I0-II0-1**	
5. Selecting a Business Idea 6. Key concepts in Selecting a Business Idea 6.1 Criteria 6.2 Techniques			**LO 2. Select a business idea based on the criteria and techniques set** 2.1 Enumerate various criteria and steps in selecting a business idea 2.2 Apply the criteria/steps in selecting a viable business idea 2.3 Determine a business idea based on the criteria/techniques set	**TLE_EM9-12-III0-2**	

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
7. Branding			**LO 3. Develop a brand for the product** 3.1 Identify the benefits of having a good brand 3.2 Enumerate recognizable brands in the town/province 3.3 Enumerate the criteria for developing a brand 3.4 Generate a clear appealing product brand	**TLE_EM9-12-IV0-3**	
PERFORM FILLET WELD ON CARBON STEEL PLATES (FC)					
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 (1F)** 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	**TLE_IAAW9-12FC-Ia-IIj-1**	1. T.H.E III Industrial Technology Metalworks I. 1993. pp. 98-103.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
			1.3.8 cold laps 1.4 Conducts visual inspection on 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)		
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 (2F)** 2.1 Perform stringer or layered beads in accordance with welding standards 2.2 Observe uniformity of bead, ripples in accordance with welding standards 2.3 Observe weld capping/ final pass not exceeding allowable tolerances specified by welding codes/ standards on: 2.3.1 concavity 2.3.2 convexity 2.3.3 height of reinforcement 2.3.4 underfill 2.3.5 porosities	**TLE_IAAW9-12FC-IIIa-IVj-2**	1. T.H.E III Industrial Technology Metalworks I. 1993. pp. 105-116.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
			2.3.6 undercut 2.3.7 cracks 2.3.8 cold laps 2.4 Conducts visual inspection on the finished weldment in accordance with welding standards for 2.4.1 spatters 2.4.2 arc strikes 2.4.3 slag inclusion 2.4.4 uniformity of beads 2.5 Use appropriate Personal Protective Equipment (PPE) 2.6 Perform proper housekeeping (5S)		

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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 I)
(320 hours)

Code Book Legend
Sample: TLE_IAAW7/8MC-0d-1

LEGEND		SAMPLE	
First Entry	Learning Area and Strand/ Subject or Specialization	Technology and Livelihood Education_Industrial Arts Shielded Metal Arc Welding	**TLE_IAAW 7**
	Grade Level	Grade 7	
Uppercase Letter/s	Domain/Content/ Component/ Topic	Perform Estimation and Basic Calculation	**MC**
			-
Roman Numeral **Zero if no specific quarter*	Quarter	No Specific Quarter	**0**
Lowercase Letter/s **Put a hyphen (-) in between letters to indicate more than a specific week*	Week	Week Four	**d**
			-
Arabic Number	Competency	Select measuring instruments	**1**

DOMAIN/ COMPONENT	CODE
Personal Entrepreneurial Competencies	PECS
Environment and Marketing	EM
Use Basic Hand Tools and Equipment	UT
Perform Mensuration and Calculation	MC
Apply Safety Practices	OS
Maintain Tools and Equipment	MT
Interpret Plans and Drawings	ID
Prepare Weld Materials	WM
Set-up Welding Equipment	SW
Lay-out Beads on Carbon Steel Plates	LB
Fit-up Weld Materials	FW
Repair Welds	RW
Perform Fillet Weld on Carbon Plates	FC

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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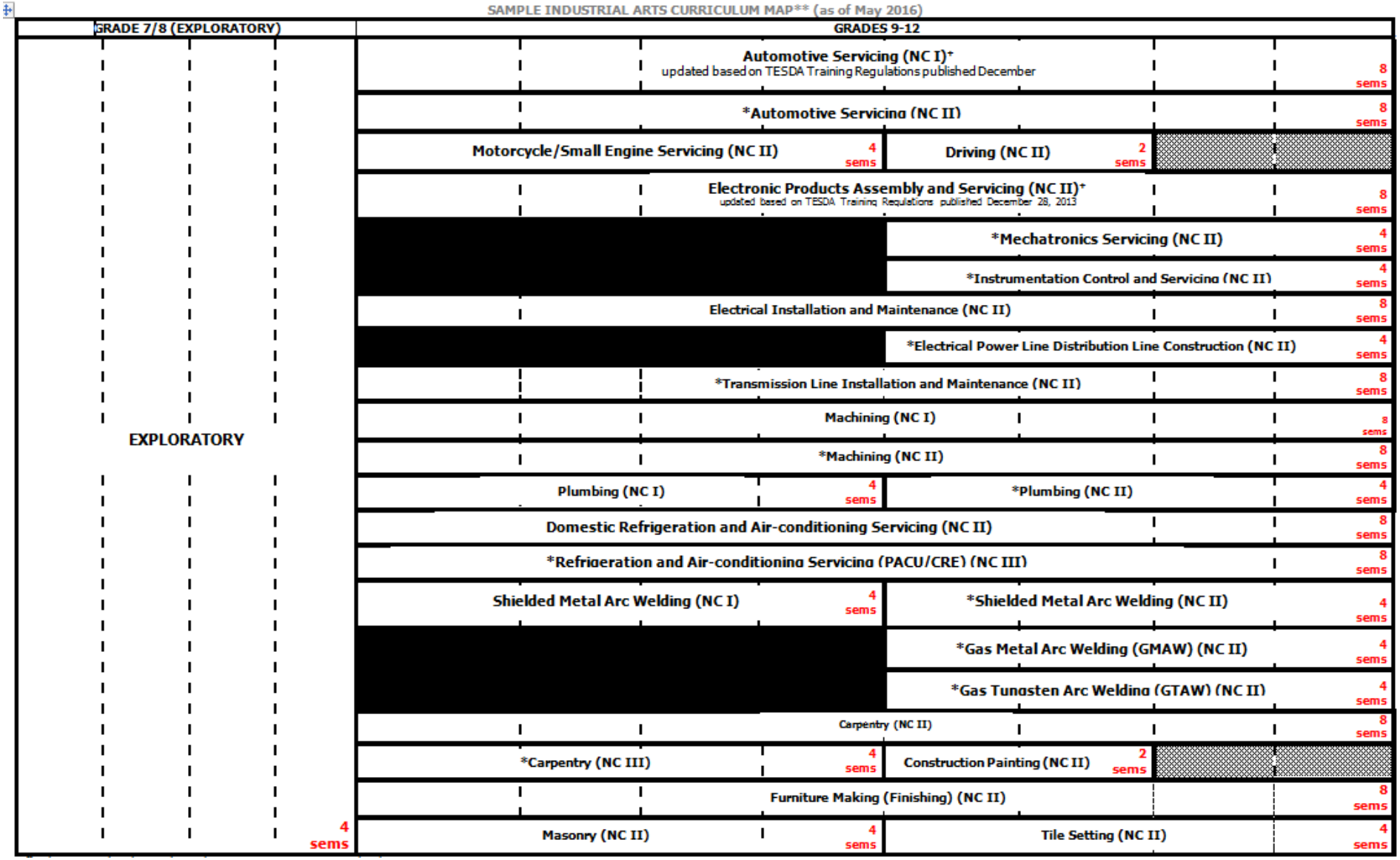
(320 hours)

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 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.**

Reference:

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