K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNICAL LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD TRACK
AGRI – FISHERY - ARTS – AQUACULTURE (NC II)
(640 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	

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNICAL LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD TRACK
AGRI – FISHERY - ARTS – AQUACULTURE (NC II)
(640 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	

INDUSTRIAL ARTS

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNICAL LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD TRACK
AGRI – FISHERY - ARTS – AQUACULTURE (NC II)
(640 Hours)

	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)

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNICAL LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD TRACK
AGRI – FISHERY - ARTS – AQUACULTURE (NC II)
(640 Hours)

	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)

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNICAL LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD TRACK
AGRI – FISHERY - ARTS – AQUACULTURE (NC II)
(640 Hours)

Course Description:

This Module is an exploratory and introductory course which leads to **Aquaculture** National Certificate Level II (NC II). It covers **four** common competencies that a high school student ought to possess: 1) using tools, equipment and paraphernalia; 2) performing mensuration and calculation; 3) apply safety measures in farm operation; and 4) interpreting technical designs 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 on career opportunities.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODING	LEARNING MATERIALS
Introduction 1. Basic concepts in Aquaculture 2. Relevance of the course 3. Career opportunities	The learner demonstrates understanding of basic concepts and underlying theories in aquaculture.	The learner independently demonstrates common competencies in aquaculture as prescribed by TESDA Training Regulations.	1. Explain basic concepts in aquaculture 2. Discuss the relevance of the course 3. Explore career opportunities in aquaculture		
PERSONAL ENTREPRENEURIAL COMPETENCIES (PECS)					
1. Assessment of Personal 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 PeCS	The learner demonstrates an understanding of one's Personal Competencies and Skills (PeCS).	The learner recognizes his/her Personal Competencies and Skills (PeCS) and is able to compare these with the PeCS of a practicing entrepreneur/ employee involved in aquaculture.	**LO 1. Recognize Personal Competencies and Skills (PeCS) needed** aquaculture 1.1. Identify and assess one's PeCS: Characteristics, Attributes, Lifestyle, Skills, Traits 1.2. Identify and assess a practitioner's PeCS: Characteristics, Attributes, Lifestyle, Skills, Traits 1.3. Compare self with a practitioner. 1.4. Identify areas for improvement, development	**TLE_PECS9-12-00-1**	

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODING	LEARNING MATERIALS
in relation to those of a practicing entrepreneur/ employee			and growth		
ENVIRONMENT AND MARKET (EM)					
1. Key concepts of Environment & Market 2. Products & services available in the market 3. Concept of differentiation of products & services 4. Concept of Customers and the reasons they buy products & services 5. Competitors in the market	Learner demonstrates understanding of the environment and market of aquaculture	The learner independently identifies the products/services available, the customers, and the competition within the aquaculture market.	**LO 1. Recognize and understand the market for aquaculture.** 1.1. Identify the different products/services available in the market 1.2. Enumerate the differences between these products 1.3. Identify who the customers of these products are and the reason these products/services are purchased 1.4. Identify the companies who sell these products/services in the market	**TLE_EM9-12-00-1**	
LESSON 1: USE FISHERY TOOLS AND EQUIPMENT (UT)					
1. Fishery tools 2. Safety practices during farm operation 3. Fishery equipment 4. Fishery facilities	The learner demonstrates understanding of concepts, underlying theories and principles in the use of tools and equipment in aquaculture.	The learner independently uses tools and equipment in aquaculture according to standard procedure.	**LO 1. Select and use fishery tools** 1.1. Identify appropriate fishery tools according to requirement 1.2. Check for faulty and defective tools in accordance with farm procedures	**TLE_AFAQ9-12UT-Ia-1**	1. CBLM III Fish Culture. Module I. pp. 4-8. 2. CBLM III Fish Culture. Module II.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODING	LEARNING MATERIALS
5. Preventive maintenance			1.3. Use appropriate tools and equipment		Lesson I.
			LO 2. Select and operate fishery equipment 2.1. Identify fishery equipment and facilities 2.2. Conduct pre-operation check-up in line with manufacturer's manual 2.3. Follow safety precautions 2.4. Identify and report faults and defects of tools 2.5. Use fishery equipment and facilities according to their functions 2.6. Read instructional manuals on farm tools and equipment	**TLE_AFAQ9-12UT-Ia-b-2**	1. CBLM III Fish Culture. Module II Lesson II. pp. 8-11. 2. CBLM II Fish Capture. Module II. Lesson II.
			LO 3. Perform preventive maintenance 3.1. Follow aquaculture procedures in cleaning tools, equipment and facilities after use 3.2. Perform routine check-up and maintenance 3.3. Store tools and equipment in areas in accordance with farm procedures	**TLE_AFAQ9-12UT-Ic-3**	1. CBLM III Fish Culture II. Module II. Lesson III. 2. CBLM II Fish Capture. Module II. Lesson III.
LESSON NO. 2: PERFORM ESTIMATION AND BASIC CALCULATION (MC)					

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODING	LEARNING MATERIALS
1. Problem solving procedures 2. Cost estimates of facilities 3. Calendar of activities 4. Systems of measurement 5. Unit of measurement 6. Conversion of units 7. Fractions and decimals 8. Percentage and ratios 9. Simple record keeping	The learner demonstrates understanding of concepts, underlying theories and principles in performing estimation and basic calculations in aquaculture.	The learner independently performs estimation and basic calculations relative to aquaculture.	**LO 1. Perform estimation** 1.1. Identify job requirements from oral and written communication 1.2. Estimate quantities of materials and resources required to complete a work/task 1.3. Estimate time needed to complete a work/activity 1.4. Make estimate of work materials and resources	**TLE_AFAQ9-12MC-Id-1**	1. CBLM II Fish Culture. Module III. Lesson I. 2. CBLM II Fish Capture. Module III. Lesson II.
			LO 2. Perform basic calculations 2.1. Check and complete computed number 2.2. Identify basic calculations to be made according to job requirements 2.3. Ascertain systems and units of measurement to be followed 2.4. Follow the appropriate mathematical operations to comply with the job requirements 2.5. Explain how to review and check results obtained in the computation of mathematical problems 2.6. Calculate whole numbers, fractions, percentages and mixed numbers	**TLE_AFAQ9-12MC-Ie-2**	
LESSON NO. 3: DRAW THE LAYOUT PLANS FOR PONDS, TANKS PENS AND CAGES (ID)					

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODING	LEARNING MATERIALS
1. Pond designs 2. Compartments 3. Gate location 4. Types of dikes 5. Characteristics of water 6. Supply canal 7. Shapes of tanks 8. Life support system for tanks	The learner demonstrates understanding of concepts, underlying theories and principles in drawing layout plans for ponds, tanks, pens, and cages.	The learner draws lay-out plans for ponds, tanks, pens and cages in accordance with established standards.	**LO 1. Draw layout plans for ponds** 1.1. Identify different pond compartments 1.2. Use signs and symbols of plan according to fishpond engineering standards 1.3. Draw layouts of different pond designs according to established procedures	**TLE_AFAQ9-12ID-If-1**	CBLM III Fish Culture. Module II. Lesson I.
			LO 2. Draw layout plans for tanks 2.1. Identify different life support systems for tanks 2.2. Use signs and symbols of plan according to fishpond engineering standards 2.3. Draw layouts of different tank designs according to established procedures	**TLE_AFAQ9-12ID-Ig-2**	CBLM III Fish Culture. Module II. Lesson II.
			LO 3. Draw layout plans for pens and cages 3.1. Identify the different life support systems for pens and cages 3.2. Use signs and symbols of plan according to fishpond engineering standards 3.3. Draw layouts of different	**TLE_AFAQ9-12ID-Ih-3**	CBLM III Fish Culture. Module III. Lesson I.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODING	LEARNING MATERIALS
			pens and cages designs according to established procedures		
LESSON 4: APPLY SAFETY MEASURES IN FARM OPERATIONS (OS)					
1. Safety Measures 2. Apply Safety Measures 3. Safekeeping/Disposal of tools, materials and outfits 4. Personal Protective Equipment	The learner demonstrates understanding of concepts, underlying theories and principles of applying safety measures in aquaculture.	The learner independently observes safety measures in aquaculture.	**LO 1. Apply appropriate safety measures** 1.1. Identify work tasks 1.2. Determine place and time for safety measures 1.3. Prepare appropriate tools, materials and outfits 1.4. Use tools and materials accordingly 1.5. Identify hazards 1.6. Wear outfit accordingly 1.7. Observe shelf life 1.8. Follow emergency procedures	**TLE_AFAQ9-12OS-Ii-1**	1. CBLM III Horticulture NC II. Module I. Lesson II. 2008. 2.CBLM II Fish Culture. Module I. Lesson I-II.
			LO 2. Safekeeping/disposal of tools materials and outfit 2.1. Explain how to clean used tools and outfits before storing 2.2. Label unused materials and supplies according to manufacturer's recommendation before storing 2.3. Observe how to dispose waste materials	**TLE_AFAQ9-12OS-Ij-2**	1. CBLM III Horticulture NC II. Module I. Lesson III. 2008. 2. CBLM II Fish Capture. Module I. Lesson III.

Course Description:

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNICAL LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD TRACK
AGRI – FISHERY - ARTS – AQUACULTURE (NC II)

(640 Hours)

This is a specialization course which leads to an **Aquaculture** National Certificate II (NC II). It covers one core competency that a high school student ought to possess: conducting pre-operations aquaculture activities.

The preliminaries of this specialization course include the following: 1) discussion on the relevance of the course; 2) explanation of the 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 aquaculture 2. Relevance of the course 3. Career opportunities	The learner demonstrates understanding of basic concepts and underlying theories in aquaculture.	The learner independently demonstrates common competencies in aquaculture as prescribed by TESDA Training Regulations.	1. Explain basic concepts in aquaculture 2. Discuss the relevance of the course 3. Explore on opportunities for Aquaculture as a career or source of extra income		
PERSONAL ENTREPRENEURIAL COMPETENCIES (PECS)					
1. Assessment of Personal Competencies and Skills (PeCS) vis-à-vis a practicing entrepreneur/employee in the 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,	The learner demonstrates understanding of one's Personal Competencies and Skills (PeCS) and what it takes to become successful in the field.	The learner recognizes his/her Personal Competencies and Skills (PeCS) and is able to compare these with the PeCS of a practicing entrepreneur/employee involved in the Aquaculture.	**LO 1. Develop and Strengthen Personal Competencies and Skills (PeCS) needed** aquaculture 1.1. Identify & Assess one's PeCS: Characteristics, Attributes, Lifestyle, Skills, Traits 1.2. Identify successful entrepreneurs/ employees in the town 1.3. Identify & Assess a practitioner's: Characteristics, Attributes, Lifestyle, Skills, Traits 1.4. Compare self with a practitioner 1.5. Identify areas for improvement,	**TLE_PECS9-12-00-1**	

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
strengthen and develop ones PeCS based on the results			development and growth 1.6. Align, strengthen, develop areas based on the results of the PeCS Assessment		
ENVIRONMENT AND MARKET (EM)					
THE MARKET (The Town) 1. Key concepts of the Market 2. Players in the Market (Competitors) 3. Products and services available in the market	The learner demonstrates understanding of the market of aquaculture in the context of the town.	The learner independently identifies the products/services available and the competitors in the town's aquaculture market.	**LO 1. Recognize and understand the market for aquaculture** 1.1 Identify the players/ competitors within the town 1.2 Identify the different products/services available in the market 1.3 Enumerate the differences between these products/ services	**TLE_EM9-12-00-1**	
THE MARKET – CUSTOMER 1. Key concepts in Identifying and Understanding the Consumer 2. Consumer Analysis through: 2.1. Observation 2.2. Interviews 2.3. FGDs (Focused Group Discussions)	The learner demonstrates understanding of the customers of aquaculture.	The learner independently identifies the customers within the aquaculture market.	**LO 2. Recognize the customers in the aquaculture market** 2.1. Identify the different customers of the market 2.2. Identify the customers' needs and wants through consumer analysis 2.3. Conduct observation exercises, interviews, Focused Group Discussions (FGD) and a survey	**TLE_EM9-12-00-2**	

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
2.4. Survey					
THE MARKET - GENERATING BUSINESS IDEA 1. Key concepts in Generating Business Ideas 2. Knowledge, skills, passions, and interests 3. New applications 4. Irritants	The learner demonstrates understanding of the techniques of generating business ideas.	The learner independently generates business ideas using the various techniques available.	**LO3. Create new business ideas using the various techniques and based on the analyses of the market for aquaculture** 4.1. Generate business ideas using knowledge, skills, passions, and interests 4.2. Generate business ideas using new applications (finding new use for existing products/materials) 4.3. Generate business ideas from one's irritants	**TLE_EM9-12-00-3**	
THE MARKET - GENERATING BUSINESS IDEA 1. Key concepts in Generating Business Ideas 2. Striking ideas (new concept) 3. Serendipity Walk	The learner demonstrates understanding of the techniques used in generating business ideas.	The learner independently generates business ideas using the various techniques available.	**LO 4. Create new business ideas using the various techniques and based on the analyses of the market for aquaculture** 4.1. Generate business ideas based on striking Ideas 4.2. Generate business ideas using the Serendipity Walk	**TLE_EM9-12-00-4**	
QUARTER 1 – CONDUCT PRE-OPERATIONS AQUACULTURE ACTIVITIES **LESSON 1: PREPARATION OF TOOLS AND SIMPLE EQUIPMENT (PT)**					
1. Materials in	The learner demonstrates	The learner independently	**LO 1. Prepare tools and**	**TLE_AFAQ9-12PT-**	CBLM III

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
fishpond/fish tank construction 2. Tools used in fishpond/fish tank construction 3. Types of finishing materials for fishpond/fish tanks 4. Construction materials 5. Inspection of condition of tools	understanding of the preparation of construction materials and tools in fishpond/fish tank construction.	prepares appropriate materials and tools in fishpond/fish tank construction based on industry standards.	**materials in fishpond/fish tank construction** 1.1. Check and clean tools and equipment 1.2. Check harvesting tools 1.3. Perform simple repairs 1.4. Inspect materials for possible repair	**Ia-j-1**	Fish Culture. Module I. Lesson I.
QUARTER 2 – CHANGING WATER OF AQUACULUTURE FACILITY					
1. Sources of water 2. Quantity 3. Quality 4. Drainage 5. Methods of changing water 6. Types of water 6.1. Freshwater 6.2. Saline water 6.3. Brackish water 6.4. Water exchange			1.5. Determine the volume of water 1.6. Select appropriate method of water exchange 1.7. Carry out water exchange	**TLE_AFAQ9-12PT–IIa-j-1**	CBLM III Fish Culture. Module I. Lesson II.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
QUARTER 3 – MORTALITIES					
1. Mortality 1.1. Monitor and collect mortalities 1.2. How to calculate mortality rate 1.3. Analyze factors leading to mortality 2. Predator 2.1. Types of predator 2.2. How to reduce mortality 2.3. The use of disinfectant			1.8. Determine and analyze mortality 1.9. Check and prevent predators 1.10. Determine the causes of mortality 1.11. Observe the precautionary measures in reducing mortality 1.12. Follow steps in using disinfectants	**TLR_AFAQ9-12PT–IIIa-j-1**	
QUARTER 4 – PREPARE AND SECURE AQUACULTURE FACILITIES					
1. Prepare facilities 2. Pond construction 3. Tank construction 4. Cage and frames			1.13. Prepare ponds, cages and frames 1.14. Brush and repair cages and frames 1.15. Clean and disinfect tanks 1.16. Install structures during inclement weather 1.17. Store tools and	**TLE_AFAQ9-12PT–IVa-j-1**	

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
5. Nets 6. Cleaning 7. How to store tools 8. Structures during inclement weather			equipment properly		

Course Description:

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNICAL LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD TRACK
AGRI – FISHERY - ARTS – AQUACULTURE (NC II)

(640 Hours)

This is a specialization course which leads to **Aquaculture** National Certificate II (NC II). It covers one core competency that a high school student ought to possess: preparing and maintaining aquaculture facilities. The preliminaries of this specialization course include the following: 1) a 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 aquaculture 2. Relevance of the course 3. Career opportunities	The learner demonstrates understanding of basic concepts and underlying theories in aquaculture.	The learner independently demonstrates common competencies in aquaculture as prescribed by TESDA Training Regulations	1. Explain basic concepts in aquaculture 2. Discuss the relevance of the course 3. Explore on opportunities for Aquaculture as a career or source of extra income		
PERSONAL ENTREPRENEURIAL COMPETENCIES (PECS)					
1. Assessment of Personal Competencies and Skills (PeCS) vis-à-vis a practicing entrepreneur/ employee in the 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. Align, strengthen and develop ones PeCS based on the results	The learner demonstrates an understanding of one's Personal Competencies and Skills (PeCS) and what it takes to become successful in the field.	The learner recognizes his/her Personal Competencies and Skills (PeCS) and is able to compare these with the PeCS of a practicing entrepreneur/ employee involved in aquaculture	**LO 1. Develop and strengthen Personal Competencies and Skills (PeCS) needed in aquaculture** 1.1. Identify and assess one's PeCS: Characteristics, Attributes, Lifestyle, Skills, Traits 1.2. Identify successful entrepreneurs/ employees in the province 1.3. Identify and assess a practitioner's PeCS: Characteristics, Attributes, Lifestyle, Skills, Traits 1.4. Compare self with a practitioner 1.5. Identify areas for improvement, development and growth	**TLE_PECS9-12-00-1**	

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
			1.6. Align, strengthen, develop areas based on the results of the PeCS Assessment		
ENVIRONMENT AND MARKET (EM)					
THE MARKET (The Province) 1. Key concepts of the Market 2. Players in the Market(Competitors) 3. Products & services available in the market	The learner demonstrates understanding of the market of aquaculture in the context of the province.	The learner independently identifies the products/services available and the competitors in the province's aquaculture market.	**LO 1. Recognize and understand the market for aquaculture** 1.1 Identify the players/ competitors within the province 1.2 Identify the different products/services available in the market 1.3 Enumerate the differences between these products/ services	**TLE_EM9-12-00-1**	
THE MARKET – PRODUCT DEVELOPMENT 1. Key concepts in developing a product 2. Finding Value 3. Innovation 4. Unique Selling Proposition (USP)	The learner demonstrates understanding of developing a product in aquaculture.	The learner independently identifies the customers of the aquaculture market.	**LO 2. Develop a product for the aquaculture market** 2.1. Identify what is of "Value" to the customer 2.2. Identify the Customer 2.3. Define and identify what makes a product different 2.4. Enumerate and apply creativity and innovation techniques in order to develop a product that stands out. 2.5. Identify the unique selling proposition (USP) of the product	**TLE_EM9-12-00-2**	

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
THE MARKET - SELECTING BUSINESS IDEA 1. Key concepts in Selecting a Business Idea 2. Criteria 3. Techniques	The learner demonstrates understanding of the techniques used in selecting business ideas.	The learner independently selects a viable business idea.	**LO 3. Select a business idea for the aquaculture market based on the criteria and techniques provided** 3.1. Identify potential business ideas to select from 3.2. Enumerate the various criteria and steps to selecting a business idea 3.3. Apply the criteria/steps in order to select a viable business idea. 3.4. Identify a business idea based on the criteria/steps provided	**TLE_EM9-12-00-3**	
THE MARKET – BRANDING 1. Key concepts of Branding	The learner demonstrates an understanding of branding and develops a brand for their business idea.	The learner independently generates a brand for their business idea.	**LO 4. Develop a brand for the product** 4.1. Identify the benefits of having a good brand 4.2. Enumerate recognizable brands in the town/province 4.3. Enumerate the criteria for developing a brand 4.4. Generate a brand that is clear and follows the techniques of generating a brand	**TLE_EM9-12-00-4**	

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNICAL LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD TRACK
AGRI – FISHERY - ARTS – AQUACULTURE (NC II)
(640 Hours)

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
QUARTER 1 **LESSON 1: PREPARE AND MAINTAIN AQUACULTURE FACILITIES (PM)**					
1. Classification of tools and equipment: 1.1. Functional 1.2. Non functional 2. Site Evaluation 3. Soil analysis 4. Water retention/water holding capacity 5. Topography 6. Natural food 7. Suitable species for tanks, ponds, pens and cages 8. Area of pond/tanks 9. Water analysis	The learner demonstrates understanding of the underlying concepts and principles in the maintenance of aquaculture facilities.	The learner independently performs proper maintenance of aquaculture facilities based on industry standards.	**LO 1. Check the condition of site** 1.1. Sample and analyze the soil for water holding capacity 1.2. Determine the volume of water resources 1.3. Assess the quality of water 1.4. Measure the topography of the site 1.5. Determine the sources of natural food 1.6. Determine the suitable species to culture 1.7. Read the tidal level 1.8. Determine the area of the tank and the budget for its construction 1.9. Analyze water	**TLE_AFAQ9-12PM-Ia-j-1**	CBLM III Fish Culture. Module I. Lesson II.
QUARTER 2					
Layout of ponds, tanks, pens and cages 1. Nets and mesh size 2. Material cost 3. Species appropriate for tanks, ponds, pens and cages 4. Budgetary cost			**Ponds** 1.10. Determine the area, depth and the number and size of compartments 1.11. Position the markers as guides 1.12. Determine the materials used 1.13. Determine the number of pumps	**TLE_AFAQ9-12PM-IIa-j-1**	CBLM III. Fish Culture. Module III. Lesson I.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
of ponds, tanks, pens, and cages 5. Frames 6. Other important facilities			and their location 1.14. Plan for the other important facilities		
QUARTER 3					
1. Area 2. Depth 3. Number and size of compartments 4. Markers 5. Number of pumps 6. Location of pumps 7. Materials used 8. Other facilities			**Tanks** 1.15. Determine the area, depth and the number and size of compartments 1.16. Position the markers as guides 1.17. Determine the materials used 1.18. Determine the number of pumps and their location 1.19. Plan for the other important facilities **Pens** 1.20. Determine the area, depth and the number and size of compartments 1.21. Determine the materials used **Cages** 1.22. Determine the area, depth, and the number and size of compartments 1.23. Determine the materials used	**TLE_AFAQ9-12PM-IIIa-j-1**	1. CBLM III Fish Culture. Module III. Lesson II. 2. CBLM III Fish Culture. Module III. Lesson III.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
			1.24. Determine the mesh size		
QUARTER 4					
1. Mobile resources and carry-out installation of facilities 2. Major support 3. Life support 4. Position of the equipment 5. Netting materials 6. Floats and sinkers 7. Mooring system 8. Bottom of the net			**Ponds** 1.25. Prepare construction resources 1.26. Install major and other support facilities 1.27. Install life support facilities **Tanks** 1.28. Install life support facilities 1.29. Lay out facilities **Pens** 1.30. Fabricate netting materials, floats and sinkers 1.31. Inspect and set-up nets **Cages** 1.32. Check bottom of net 1.33. Check mooring system 1.34. Set-up net	**TLE_AFAQ9-12-IVa-j-1**	CBLM III Fish Culture. Module IV. Lesson I-III.

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNICAL LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD TRACK
AGRI – FISHERY - ARTS – AQUACULTURE (NC II)
(640 Hours)

Course Description:

This is a specialization course which leads to **Aquaculture** National Certificate II (NC II). It covers one core competency that a high school student ought to possess, Operate Fish Nursery. The preliminaries of this specialization course include the following: 1) discussion on the relevance of the course; 2) explanation of key concepts relative to the course and 3) exploration on career opportunities.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
Introduction 1. Basic concepts in aquaculture 2. Relevance of the course 3. Career opportunities	The learner demonstrates understanding of basic concepts and underlying theories in aquaculture.	The learner independently demonstrates common competencies in aquaculture as prescribed in the TESDA Training Regulation	1. Explain basic concepts in aquaculture 2. Discuss the relevance of the course 3. Specialize on opportunities for Aquaculture as a career or source of extra income	
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 understanding of one's Personal Competencies and Skills (PECs) in Aquaculture.	The learner independently creates a plan of action that strengthens/ further develops one's PECs in Aquaculture.	**LO 1. Develop and strengthen personal competencies and skills (PECs) needed in Aquaculture** 1. Identify areas for improvement, development and growth 2. Align one's PECs according to his/her business/career choice 3. Create a plan of action that ensures success of his/her business/career choice	**TLE_ PECS9-12-00-1**

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNICAL LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD TRACK
AGRI – FISHERY - ARTS – AQUACULTURE (NC II)
(640 Hours)

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
ENVIRONMENT AND MARKET				
1. Product Development 2. Key concepts of developing a product 3. Finding Value 4. Innovation 4.1. Unique Selling Proposition (USP)	The learner demonstrates understanding of environment and market in Aquaculture in one's province.	The learner independently creates a business vicinity map reflective of potential Aquaculture market within the province.	**LO 1. Develop a product/service in Aquaculture** 1.1. Identify what is of "Value" to the customer 1.2. Identify the customer to sell to 1.3. Explain what makes a product unique and competitive 1.4. Apply creativity and innovative techniques to develop marketable product 1.5. Employ a Unique Selling Proposition (USP) to the product/service	**TLE_EM9-12-00-1**
5. Selecting Business Idea 6. Key concepts of 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_ EM9-12-00-2**

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
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_ EM9-12-00-3**
QUARTER 1 : PREPARE AND MAINTAIN FISH NURSERIES (PM) *(Note: Research components should be included in all activities)*				
1. Proper use of tools and equipment 2. Safe keeping of equipment every after use 3. Principles of soil tilling and drying 4. Type and amount of Lime 5. Pest and predator control 6. Type and amount of Fertilizers 7. Principles of Natural Food Growing 8. Types and setting-up of aerator/agitators 9. Stocking Rate 10. Water quality parameters 11. Principles of proper handling, transporting and stocking of fishes 12. Acclimatization 13. Proper disposal of packing materials	The learner demonstrates understanding on the underlying concepts and principles in the preparation and maintenance of fish/shrimp nurseries based on industry standards.	The learner independently performs proper preparation and maintenance of fish/shrimp nurseries based on industry standards.	**LO 1. Prepare and maintain fish/shrimp nurseries** 1.1. Select appropriate tools, equipment and materials 1.2. Dry the pond 1.3. Repair & plow the soil and dried again 1.4. Harrow and dry the soil 1.5. Select and apply lime 1.6. Select and apply predator and pest control 1.7. Grow the natural food 1.8. Select fertilizer and compute rate application 1.9. Set-up aerators/agitators 1.10. Determine water quality parameters i.e. D.O., Transparency, Nitrates, Ammonia and temperature are determined prior to stocking of fry	**TLE_AFFN9-12PM-Ia-j-1**

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
			1.11. Observe care in handling, transporting and stocking of fishes	
QUARTER 2 : FEEDS AND FEEDING (FF)				
1. Proper storage of feeds 2. Time and Frequency of Feeding 3. Method of Feeding (Manual and Mechanical) 4. The economic and environmental effects of underfeeding and overfeeding 5. Feed Composition 6. Feed Formulation using the Pearson Square Method 7. Daily Feed Ration	The learner demonstrates understanding on the underlying concepts and principles in Fish Feeds and Feeding.	The learner independently performs proper selection, application and storage of fish/shrimp feeds based on industry standards.	**LO 1. Feeds and Feeding** 1.1. Store feeds properly 1.2. Analyze the effect of time and frequency of feeding 1.3. Apply the principles of manual and mechanical feeding 1.4. Determine the economic and environmental impact of improper feeding 1.5. Sample and analyze composition of commercial feeds 1.6. Formulate feed with the desired Crude Protein content using locally-available ingredients 1.7. Compute daily feed ration	**TLE_ AFFN9-12FF-IIa-j-1**
QUARTER 3 : WATER QUALITY AND FISH HEALTH MANAGEMENT (WF)				
1. Physio-chemical parameters 2. Tools and equipment used in water analysis 3. Types and symptoms of common fish diseases 4. Detection of infected fishes 5. Prophylactic treatment and safety procedures 6. Proper handling and disposal of chemicals 7. Preventive pest and disease procedures	The learner demonstrates understanding on the underlying concepts and principles in monitoring water quality and managing fish health.	The learner independently performs monitoring water quality and managing fish health proper based on industry standards.	**LO 1. Water Quality** 1.1. Monitor water quality 1.2. Maintain Optimum Water Quality	**TLE_AFFN9-12WF-IIIa-j-1**
			LO 2. Fish Health Management 2.1. Monitor and observe occurrence of diseases 2.2. Diagnose infected fish 2.3. Identify appropriate treatment	**TLE_AFFN9-12WF-IIIa-j-2**

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
			2.4. Practice preventive measures against disease	
QUARTER 4 : HARVEST AND POST-HARVEST HANDLING (HH)				
1. Materials, tools and equipment in harvesting, grading, counting, packing and transporting of fingerlings 2. Principles of harvesting, grading, counting, packing and transporting of fingerlings 3. Safety procedures in harvesting, grading, counting, packing and transporting of fingerlings	The learner demonstrates understanding on the underlying concepts and principles in harvesting, grading, counting, packing and transporting of fingerlings.	The learner independently performs harvesting, grading, counting, packing and transporting of fingerlings based on industry standards.	**LO 1. Harvest and Post-Harvest Handling** 1.1. Schedule harvest 1.2. Prepare harvesting materials and supplies required in the harvest operation 1.3. Observe proper handling while harvesting 1.4. Demonstrate proper grading, counting and packing of live fish	**TLE_AFFN9-12HH-IVa-j-1**

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNICAL LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD TRACK
AGRI – FISHERY - ARTS – AQUACULTURE (NC II)
(640 Hours)

Course Description:

This is a specialization course which leads to **Aquaculture** National Certificate II (NC II). It covers one core competency that a high school student ought to possess to perform fish or shrimp grow-out operations. The preliminaries of this specialization course include the following: 1) discussion on the relevance of the course; 2) explanation of key concepts relative to the course and 3) exploration on career opportunities.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
Introduction 1. Basic concepts in aquaculture 2. Relevance of the course 3. Career opportunities	The learner demonstrates understanding of basic concepts and underlying theories in aquaculture.	The learner independently demonstrates common competencies in aquaculture as prescribed in the TESDA Training Regulation.	1. Explain basic concepts in aquaculture 2. Discuss the relevance of the course 3. Specialize on opportunities for Aquaculture as a career or source of extra income	
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 understanding of one's Personal Competencies and Skills (PECs) in Aquaculture.	The learner independently creates a plan of action that strengthens/ further develops one's PECs in Aquaculture.	**LO 1. Develop and strengthen personal competencies and skills (PECs) needed in Aquaculture** 1. Identify areas for improvement, development and growth 2. Align one's PECs according to his/her business/career choice 3. Create a plan of action that ensures success of his/her business/career choice	**TLE_ PECS9-12-00-1**
ENVIRONMENT AND MARKET (EM)				
1. Product Development 2. Key concepts of developing a product 3. Finding Value	The learner demonstrates understanding of environment and market in Aquaculture in one's region.	The learner independently creates a business vicinity map reflective of potential Aquaculture market within the	**LO 1. Develop a product/ service in Aquaculture** 1.1. Identify what is of "Value" to the customer	**TLE_ EM9-12-00-1**

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
4. Innovation 4.1. Unique Selling Proposition (USP)		region.	1.2. Identify the customer to sell to 1.3. Explain what makes a product unique and competitive 1.4. Apply creativity and Innovative techniques to develop marketable product 1.5. Employ a Unique Selling Proposition (USP) to the product/service	
5. Selecting Business Idea 6. Key concepts of Selecting a: 6.1. Business Idea 6.2. Criteria 6.3. 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_EM9-12-00-2**
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_EM9-12-00-3**

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNICAL LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD TRACK
AGRI – FISHERY - ARTS – AQUACULTURE (NC II)
(640 Hours)

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
QUARTER 1 : PREPARE GROW-OUT FACILITIES (GF) *(Note: Research components should be included in all activities)*				
1. Procedures in pond drying 2. Steps in applying predator control 3. Soil Acidity 4. Identifying pH, lime and liming 5. Fertilizers and Fertilization 6. Principles and procedures in installing pens and cages 7. Procedures in preparing tanks for stocking	The learner demonstrates understanding on the underlying concepts and principles preparing grow-out facilities based on industry standards.	The learner independently performs proper preparation and maintenance of fish/shrimp nurseries based on industry standards.	**LO 1. Grow-Out Facilities** 1.1. Ponds 1.1.1. Dry pond 1.1.2. Apply predator control 1.1.3. Analyze soil pH 1.1.4. Apply lime to correct soil acidity 1.1.5. Compute fertilizer requirement 1.1.6. Apply fertilizer to enhance growth of natural food 1.2. Pens and Cages 1.2.1. Install or set-up frames 1.2.2. Install fabricated net into cages to the cage frame 1.3. Tanks 1.3.1. Tanks are cleaned, dried and disinfected	**TLE_AFGOO9-12GF-Ia-j-1**
QUARTER 2 : STOCKING OF FINGERLINGS AND STOCK SAMPLING (FS)				
1. Procedures and importance of acclimatization 2. Stocking Rate and Stocking Density 3. Classification of suitable species 4. Process of assessing fingerling quality 5. Fish stocking (Time and Requirements)	The learner demonstrates understanding on the underlying concepts and principles in stocking of fingerlings and stock sampling.	The learner independently performs proper stocking of fingerlings and stock sampling based on industry standards.	**LO 1. Stock Fingerlings** 1.1. Acclimatize fish/crustacean fingerlings 1.2. Determine the stocking density with due consideration on the pond carrying capacity 1.3. Classify suitable species of fish/shrimp	**TLE_AFGOO9-12FS-IIa-e-1**

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
6. Basic factors in maintaining growth of natural foods 7. Biomass and ABW 8. Importance and procedures of stock sampling			**LO 2. Stock Sampling** 2.1. Assess fingerling quality 2.2. Release fingerlings as scheduled or at appropriate time of the day 2.3. Maintain growth of natural food 2.4. Weigh stock samples for ABW and Biomass determination 2.5. Undertake regular stock sampling	**TLE_AFGOO9-12FS-IIf-j-2**
QUARTER 3 : PERFORM FEEDING OPERATIONS AND MAINTAIN GOOD WATER QUALITY				
1. Factors to consider in selecting feeds 2. Principles of feed sampling and analysis 3. Accurate way of computing daily feed ration 4. Feed formulation 5. Importance of keeping records of feeds given 6. Types and operations of measuring instruments in monitoring water quality 7. Process of maintaining optimum water quality by pond freshening	The learner demonstrates understanding on the underlying concepts and principles in performing feeding operations and in maintaining good water quality.	The learner independently performs feeding operations and maintains good water quality based on industry standards.	**LO 1. Perform Feeding Operations** 1.1. Select feeds based on quality 1.2. Sample and analyze feeds periodically 1.3. Compute Average Body Weight (ABW), Biomass, Daily Feed Ration (DFR) and Feed Conversion Ratio (FCR) 1.4. Formulate feeds using locally available materials 1.5. Record feed consumption	**TLE_AFGOO9-12FS-IIIa-e-1**
			LO 2. Maintain Good Water Quality 2.1 Monitor water quality using appropriate measuring instruments according to the Standard Methods In The Analysis Of Water And	**TLE_AFGOO9-12FS-IIIf-j-2**

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
			Wastewater 2.2 Maintain optimum water quality by pond freshening and bio-manipulation	
QUARTER 4 : PERFORM COMMON DISEASE DIAGNOSIS AND TREATMENT / HARVEST AND POST-HARVEST HANDLING (DT)				
1. Identifying diseases through physical appearance and behavioral patterns of fishes 2. Basic steps in sampling and diagnosing infected fish, and the recommended treatment 3. Important considerations in preventing/safeguarding the stock against occurrences of viral, bacterial, fungal and parasitic diseases 4. Proper use/operation of seines in harvesting 5. Process of total harvesting of stock in cages 6. Important considerations in packing and transporting harvested fishes. 7. Financial Analysis 8. Record Keeping	The learner demonstrates understanding on the underlying concepts and principles in performing common disease diagnosis and treatment; and harvest and post-harvest handling.	The learner independently performs common disease diagnosis and treatment; and harvest and post-harvest handling based on industry standards.	**LO 1. Perform Common Disease Diagnosis and Treatment** 1.1. Observe and monitor disease through physical appearance and behavioral patterns of the stock 1.2. Sample and diagnose Infected fish 1.3. Identify and implement recommended treatment 1.4. Prevent/safeguard the stock against occurrences of viral, bacterial, fungal and parasitic diseases	**TLE_AFGOO9-12DT-IVa-f-1**
			LO 2. Harvest and Post-Harvest Handling 2.1. Schedule harvest and market of products 2.2. Use seine in pond and cages to harvest the stock 2.3. Lift the cages to collect the stock 2.4. Pack and transport harvested fishes 2.5. Prepare cost and return analysis of the project 2.6. Keep financial records	**TLE_AFGOO9-12DT-IVg-j-2**

GLOSSARY	
Dikes	An embankment of earth and rock built to prevent floods or to hold irrigation water in for agricultural purposes
Brackish water	Briny water is water that has more salinity than fresh water, but not as much as seawater. It may result from mixing of seawater with fresh water, as in estuaries, or it may occur in brackish fossil aquifers.
Compartments	a separate section or part of a structure or container; One of the parts or spaces into which an area is subdivided.
Culture	The cultivation of plants, especially by scientific methods designed to improve stock or to produce new ones
Drainage	Ss the natural or artificial removal of surface and sub-surface water from an area; (2) The action or a method of draining.
Frames	To conceive or design; To build by putting together the structural parts of; construct
Freshwater	Is naturally occurring water on the Earth's surface in ice sheets, ice caps, glaciers, icebergs, bogs, ponds, lakes, rivers and streams, and underground as groundwater in aquifer sand underground streams. Fresh water is generally characterized by having low concentrations of dissolved salts and other total dissolved solids.
Inclement weather	unpleasant weather which is stormy or rainy
Life support system	Is any natural or human-engineered (constructed or made) system that furthers the life of the biosphere in a sustainable fashion. 2 an artificial or natural system that provides all or some of the items (as oxygen, food, water, control of temperature and pressure, disposition of carbon dioxide and body wastes) necessary for maintaining life or health
mesh size	Is a term that refers to the extensiveness of apertures within a mesh network used to sort or standardize granular material. It may also be used to sort cereals in a factory. The larger the aperture the larger the mesh size; An open fabric of string or rope or wire woven together at regular intervals
Mooring system	A mooring system is made up of a mooring line, anchor and connectors, and is used for station keeping of a ship or floating platform in all water depths. A mooring line connects an anchor on the seafloor to a floating structure.
Mortality	An organism that lives by preying on other organisms; an animal that hunts and seizes other animals for food.
Natural food	The term is assumed to imply foods that are minimally processed and do not contain manufactured ingredients, mostly available in the environment.
Netting materials	anything that are utilized in making fish nets
Saline water	Is a general term for water that contains a significant concentration of dissolved salts. The salt concentration is usually expressed in parts per thousand or parts per million
Sinkers	One that sinks, as a weight used for sinking fishing lines or nets.
Species	Is one of the basic units of biological classification and a taxonomic rank. A species is often defined as a group of

GLOSSARY	
	organisms capable of interbreeding and producing fertile offspring; A group of animals or plants that are similar and can produce young animals or plants : a group of related animals or plants that is smaller than a genus
Supply canal	An artificial waterway for navigation or for draining or irrigating land; a long narrow place that is filled with water and was created by people so that boats could pass through it or to supply fields, crops, etc., with water
tidal level	An exceptionally large ocean wave, especially one caused by an underwater earthquake or volcanic eruption; An unusual, often destructive rise of water along the seashore, as from a storm or a combination of wind and high tide.
Topography	The arrangement of the natural and artificial physical features of an area; detailed, precise description of a place or region; graphic representation of the surface features of a place or region on a map, indicating their relative positions and elevations.
Water exchange	The volume and rate of water exchange between air and a body of water in a specific location, or between several bodies of water, controlled by such factors as tides, winds, river discharge, and currents.
Water retention/water holding	The capacity of anything to retain or hold water or one that does not permit water to percolate, seep or escape

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNICAL LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD TRACK
AGRI – FISHERY - ARTS – AQUACULTURE (NC II)
(640 Hours)

CODE BOOK LEGEND
Sample: TLE_AFAQ9-12UT-Ia-j-1

LEGEND		SAMPLE	
First Entry	Learning Area and Strand/ Subject or Specialization	Technology and Livelihood Education_Agri-Fishery Aquaculture	**TLE_AFAQ 9-12**
	Grade Level	Grade 9-12	
Uppercase Letter/s	Domain/Content/ Component/ Topic	**Preparation of tools and simple equipment**	**UT**
			-
Roman Numeral **Zero if no specific quarter*	Quarter	First Quarter	**I**
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	Prepare tools and materials in fishpond/fish tank construction	**1**

DOMAIN/ COMPONENT	CODE
Personal Entrepreneurial Skills	PECS
Environment and Marketing	EM
Use and Maintain Tools and Equipment	UT
Perform Estimation and Basic Calculation	MC
Draw the Layout Plans for Ponds, Tanks, Pens and Cages	ID
Apply Safety Measures in Operations	OS
Prepare and Maintain Aquaculture Facilities	PM
Preparation of Tools and Simple Equipment	PT
Prepare and Maintain Aquaculture Facilities	PM

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 Agri-Fishery 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 TECHNICAL LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD TRACK
AGRI – FISHERY - ARTS – AQUACULTURE (NC II)
(640 Hours)

SAMPLE AGRICULTURE AND FISHERY ARTS CURRICULUM MAP (updated as of May 2016)**

GRADE 7/8 (EXPLORATORY)	GRADES 9-12		
EXPLORATORY	Agricultural Crops Production (NC I) 4 sems		
	Agricultural Crops Production (NC II)+ updated based on TESDA Training Regulations published on December 28, 2013 8 sems		
	*Agricultural Crops Production (NC III) 8 sems		
	Landscape Installation and Maintenance (NC II) 4 sems	Organic Agriculture (NC II) 4 sems	
	Pest Management (NC II) 4 sems	Rice Machinery Operation (NC II) 4 sems	
	Animal Production (Swine) (NC II)+ updated based on TESDA Training Regulations published on December 28, 2013 4 sems	*Artificial Insemination: Swine (NC II) 2 sems	*Slaughtering Operations (Hog/Swine/Pig) (NC II) 2 sems
	Animal Production (Large Ruminants) (NC II)+ updated based on TESDA Training Regulations published on December 28, 2013 4 sems	*Artificial Insemination: Large Ruminants (NC II) 2 sems	Fish Wharf Operation 2 sems
	Animal Production (Poultry-Chicken) (NC II)+ updated based on TESDA Training Regulations published on December 28, 2013 4 sems	*Animal Health Care Management NC III 4 sems	
	Rubber Production (NC II) 4 sems	Rubber Processing (NC II) 4 sems	
	*Horticulture (NC III) 8 sems		
	Food Processing (NC II) 8 sems		
	Fish Capture (NC II) 8 sems		
	Aquaculture (NC II) 8 sems		
	Fish-Products Packaging (NC II) 4 sems	Fishing Gear Repair and Maintenance (NC III) 4 sems	

* Please note that these subjects have pre-requisites mentioned in the CG.
\+ CG updated based on new Training Regulations of TESDA.
Other specializations with no prerequisites may be taken up during these semesters.

****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-Qualification Standards Office. *Training Regulations for Aquaculture NC II.* Taguig City, Philippines: TESDA, 2011.