

**K to 12 BASIC EDUCATION CURRICULUM  
 JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD TRACK  
 AGRI-FISHERY ARTS – HORTICULTURE**

These are the list of specializations and their pre-requisites.

	<b>Specialization</b>	<b>Number of Hours</b>	<b>Pre-requisite</b>
1.	Animal Production (NC II)	480 hours	
2.	Aquaculture (NC II)	640 hours	
3.	Artificial Insemination (Ruminants) (NC II)	160 hours	Animal Production
4.	Artificial Insemination (Swine) (NC II)	160 hours	Animal Production
5.	Crop Production (NC I)	320 hours	
6.	Fish Wharf Operation (NC I)	160 hours	Fish or Shrimp Grow Out Operation
7.	Food (Fish) Processing (NC II)	640 hours	
8.	Horticulture (NC II)	640 hours	
9.	Landscape Installation and Maintenance (NC II)	320 hours	Crop Production
10.	Organic Agriculture (NC II)	320 hours	Crop Production
11.	Pest Management (NC II)	320 hours	Crop Production
12.	Rice Machinery Operation (NC II)	320 hours	Crop Production
13.	Slaughtering Operation (NC II)	160 hours	Animal Production
1.	Beauty/Nail Care (NC II)	160 hours	40 hours of the subject during exploratory Grade 7/8
2.	Attractions and Theme Parks (NC II)	160 hours	
3.	Bread and Pastry Production (NC II)	160 hours	
4.	Caregiving (NC II)	640 hours	40 hours of the subject during exploratory Grade 7/8
5.	Cookery (NC II)	320 hours	40 hours of the subject during exploratory Grade 7/8
6.	Dressmaking (NC II)	320 hours	
7.	Food and Beverage Services (NC II)	160 hours	
8.	Front Office Services (NC II)	160 hours	40 hours of the subject during exploratory Grade 7/8
9.	Hairdressing (NC II)	320 hours	
10.	Handicraft (Basketry, Macrame) (Non-NC)	160 hours	
11.	Handicraft (Fashion Accessories, Paper Craft) (Non-NC)	160 hours	
12.	Handicraft (Needlecraft) (Non-NC)	160 hours	
13.	Handicraft (Woodcraft, Leathercraft) (Non-NC)	160 hours	
14.	Housekeeping (NC II)	160 hours	
15.	Local Guiding Services (NC II)	160 hours	
16.	Tailoring (NC II)	320 hours	40 hours of the subject during exploratory Grade 7/8
17.	Tourism Promotion Services (NC II)	160 hours	
18.	Travel Services (NC II)	160 hours	
19.	Wellness Massage (NC II)	160 hours	

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	<b>Specialization</b>	<b>Number of Hours</b>	<b>Pre-requisite</b>
1.	<b>ICT</b>	Computer Hardware Servicing (NC II)	
2.		Animation (NC II)	
3.		Computer Programming (NC IV)	
4.		Contact Center Services (NC II)	
5.		Illustration (NC II)	
6.		Medical Transcription (NC II)	
7.		Technical Drafting (NC II)	
1.	<b>INDUSTRIAL ARTS</b>	Automotive Servicing (NC I)	
2.		Carpentry (NC II)	
3.		Consumer Electronics Servicing (NC II)	
4.		Domestic Refrigeration and Airconditioning Servicing (NC II)	
5.		Electrical Installation and Maintenance (NC II)	
6.		Masonry (NC II)	
7.		Plumbing (NC I)	
8.		Plumbing (NC II)	Plumbing (NC I)
9.		Shielded Metal Arc Welding (NC I)	
10.		Shielded Metal Arc Welding (NC II)	Shielded Metal Arc Welding (NC I)
11.		Tile Setting (NC II)	

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**AGRI-FISHERY ARTS – HORTICULTURE**  
**Grade 7/8 (Exploratory)**

**Course Description:**

This Module is an exploratory and introductory course which leads to **Horticulture** National Certificate Level II (NC II). It covers **four** common competencies that a 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
<b>Introduction</b> 1. Basic concepts in agriculture crop production 2. Relevance of the course 3. Career opportunities	The learner demonstrates understanding of basic concepts and underlying theories in horticulture.	The learner independently demonstrates common competencies in horticulture as prescribed by TESDA Training Regulations.	1. Explain basic concepts in horticulture 2. Discuss the relevance of the course 3. Explore career opportunities for horticulture	
<b>PERSONAL ENTREPRENEURIAL COMPETENCIES</b>				
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 those of a practicing entrepreneur/employee 3. Align, strengthen and develop one's PECS based on the results	The learner demonstrates understanding of ones 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 Horticulture.	<b>LO 1. Recognize Personal Competencies and Skills (PECS) needed in Horticulture</b> 1.1. Identify and assess ones 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 and growth	<b>TLE_PEC57/8-00-1</b>
<b>ENVIRONMENT AND MARKET</b>				
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	Learner demonstrates understanding of the environment and market of Horticulture	The learner independently identifies the products/services available, the customers, and the competition within the horticulture market.	<b>LO 1. Recognize and understand the market for Horticulture</b> 1.1. Identify the different products/services available in the market 1.2. Enumerate the differences between these products 1.3. Identify the customers of these products and the	<b>TLE_EM7/8-00-1</b>

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
reasons they buy products & services 5. Competitors in the market			reason these products/services are purchased 1.4. Identify the companies selling these products/services	
<b>LESSON 1: USE AND MAINTAIN FARM TOOLS AND EQUIPMENT (UT)</b>				
1. Farm tools 2. Farm equipment 3. Parts and functions of farm tools and equipment 4. Safety practices 5. Preventive maintenance 6. Upkeep of equipment	The learner demonstrates understanding of basic concepts, underlying theories and principles in using farm tools and equipment in horticulture.	The learner uses farm tools and equipment in horticulture based on the required task.	<b>LO 1. Select farm tools</b> 1.1. Identify appropriate farm tools according to requirement 1.2. Check farm tools for faults and defects in accordance with farm procedures 1.3. Use appropriate tools and equipment safely according to job requirements and manufacturer’s instructions 1.4. Use farm tools	<b>TLE_AFHC7 /8UT-0a-1</b>
			<b>LO 2. Operates farm equipment</b> 2.1. Identify appropriate farm equipment and facilities 2.2. Follow directions in the instructional manual of farm equipment prior to operation 2.3. Conduct pre-operation check-up in line with manufacturer’s manual 2.4. Report faults in farm equipment and facilities in line with farm procedures 2.5. Use farm equipment according to their functions 2.6. Follow safety procedures	<b>TLE_AFHC7 /8UT-0b-2</b>
			<b>LO 3. Perform preventive maintenance</b> 3.1. Discuss procedures in cleaning tools and equipment in line with farm procedures immediately after use 3.2. Explain the steps in performing routine check-up and maintenance operations 3.3. Store tools and equipment in designated areas 3.4. Observe how to sharpen and oil farm tools and equipment	<b>TLE_AFHC7 /8UT-0c-3</b>
<b>LESSON NO. 2: PERFORM ESTIMATION AND BASIC CALCULATION (MC)</b>				
1. Problem solving procedures in fertilizer computation	The learner demonstrates	The learner performs estimations and basic	<b>LO 1. Perform estimation</b> 1.1 Identify job requirements	<b>TLE_AFHC7 /8MC-0d-e-</b>



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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
<b>LESSON 4: APPLY SAFETY MEASURES IN FARM OPERATIONS (OS)</b>				
<ol style="list-style-type: none"> <li>1. Farm chemicals</li> <li>2. Personal protective equipment</li> <li>3. First aid</li> <li>4. Emergency procedures</li> <li>5. Safe working environment</li> <li>6. Procedure in cleaning and storing tools and outfits</li> <li>7. Technique in storing materials and chemicals</li> <li>8. Waste disposal</li> <li>9. Water management system</li> </ol>	<p>The learner demonstrates understanding of basic concepts, underlying theories and principles in applying safety measures in farm operations.</p>	<p>The learner observes safety measures in farm operations in horticulture.</p>	<p><b>LO 1. Apply appropriate safety measures while working in the farm</b></p> <ol style="list-style-type: none"> <li>1.1 Apply safety measures based on work requirement and farm procedures</li> <li>1.2 Utilize tools and materials in accordance with specifications and procedures</li> <li>1.3 Follow the guidelines in wearing outfits in accordance with farm requirements</li> <li>1.4 Explain the importance of checking shelf life and/or expiration of materials' effectivity against manufacturer's specifications</li> <li>1.5 Differentiate the hazards in workplaces and report these in line with guidelines</li> <li>1.6 Observe how to respond to emergencies in the farm</li> <li>1.7 Discuss how to prevent accidents</li> </ol>	<p><b>TLE_AFHC7 /8OS-0h-1</b></p>
			<p><b>LO 2.Safekeeping/disposal of tools, materials and outfits</b></p> <ol style="list-style-type: none"> <li>2.1. Explain how to clean used tools and outfit following the farm procedures before storing</li> <li>2.2. Label unused materials and supplies according to manufacturer's recommendation and farm requirements before storing</li> <li>2.3. Observe how to dispose waste materials according to manufacturers', government and farm requirements</li> </ol>	<p><b>TLE_AFHC7 /8OS-0i-j-2</b></p>

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**AGRI-FISHERY ARTS – HORTICULTURE**  
(160 hours)

**Course Description:**

This is a course in **HORTICULTURE** leading to National Certificate Level II (NC II) consisting of the core competencies that a person must achieve on conducting pre-horticultural farm operations.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
<b>Introduction</b> 1. Concepts and competencies in performing pre-horticultural farm operations 2. Career Opportunities in Horticulture Farm Operations	The learner demonstrates understanding of one's Personal Competencies (PEC's) across horticultural products and services	The learner recognizes his/her Personal Competencies (PEC's) across horticultural products and services and prepares an activity plan that aligns with that of a practitioner/ entrepreneur in Horticulture	1. Explain the different factors to be considered in setting up a business 2. Assess one's PEC's, such as, characteristics, lifestyle features , and skills 3. Assess practitioner's entrepreneurial competencies, such as, characteristics, attributes, lifestyle, skills, and traits	
<b>QUARTER 1: DEVELOPING PERSONAL ENTREPRENEURIAL COMPETENCIES ACROSS ENVIRONMENT AND MARKET</b>				
<b>LESSON 1: ENTREPRENEURSHIP AND PERSONAL ENTREPRENEURSHIP COMPETENCIES (PECS)</b>				
1. Nature of entrepreneurial activities 2. Assessment of Personal Competencies and Skills (PECS) vis-à-vis a practicing entrepreneur/ employee in locality/town 2.1. Characteristics 2.2. Lifestyle 2.3. Skills 3. Analysis of PECS in relation to a practitioner 4. Align, strengthen and develop ones PECS based on the results	The learner demonstrates understanding of one's Personal Competencies and Skills (PECS) in Horticulture.	The learner recognizes his/her Personal Entrepreneurial Competencies and Skills (PECSs) and prepares an activity plan that aligns with that of a practitioner/entrepreneur in Horticulture.	<b>LO 1. Know the nature of an entrepreneurial activity in relation to Personal Entrepreneurial Competencies and Skills (PECS) needed in Horticulture</b> 1.1. Know the different factors considered in setting up businesses 1.2. Identify the characteristics, lifestyle, skills of successful entrepreneurs 1.3. Assess one's PECSs: characteristics, attributes, lifestyle, skills, traits 1.4. Assess practitioner's: characteristics, attributes, lifestyle, skills, traits 1.5. Compare one's PECSs with that of a practitioner /entrepreneur 1.6. Align one's PECSs with that of a practitioner/entrepreneur	<b>TLE_AFHC9-12PECS-Ia-e-1</b>
<b>LESSON 2: UNDERSTANDING THE ENVIRONMENT AND MARKET OF BUSINESSES (EM)</b>				
Market (Town) 1. Key concepts of Market 2. Players in the Market (Competitors) 3. Products & services available in	The learner demonstrates understanding of environment and market in Horticulture in one's town/municipality.	The learner independently creates a business vicinity map reflective of potential Horticulture market within the locality/town.	<b>LO 1. Recognize and understand the influence of the market and environment in businesses</b> 1.1 Market characteristics 1.2 Forms of businesses across industries	<b>TLE_AFHC9-12EM-If-j-1</b>

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
the market			1.3 Needs and demands through environmental scanning 1.4 4M's of production 1.5 Start-up capital, site selection, hiring, registering a business, and record keeping 1.6 SWOT 1.7 Business Plan	
<b>QUARTER 2: CONDUCT OF PRE-HORTICULTURAL FARM OPERATIONS</b> <i>(Note: Research components should be included in all activities)</i>				
<b>LESSON 3: PREPARING FARM TOOLS, IMPLEMENTS AND SIMPLE EQUIPMENT FOR HORTICULTURAL FARM OPERATIONS (PT)</b>				
1. Identification and classification of farm tools, farm implements and simple equipment <u>Tools</u> 1. Digging tools 2. Harvesting tools 3. Measuring tools, etc.) <u>Farm implements/</u> <u>Simple Equipment</u> 1. Water pumps 2. Hand tractor 3. Plow and Harrow 4. Sprayer 2. Safety precautions in preparing tools, farm implements and simple equipment 3. Basic pre-operative checking of tools, farm implements and equipment in accordance with manufacturer's manual 4. Treating tools with wear and corrosions 5. Friction			<b>LO 1. Prepare tools, farm implements, and simple equipment for horticultural operations</b> 1.1. Identify and classify tools, farm implements and simple equipment according to its usage 1.2. Perform basic pre-operative checking of tools, farm implements and equipment in accordance with manufacturer's manual 1.3. Segregate and treat tools with wear and corrosions	<b>TLE_AFHC9-12PT-IIa-j-1</b>
<b>QUARTER 3: CONDUCT OF PRE-HORTICULTURAL FARM OPERATIONS</b> <i>(Note: Research components should be included in all activities)</i>				
<b>LESSON 4: OBSERVING SAFETY PRECAUTIONS IN HORTICULTURAL FARM OPERATIONS (OH)</b>				
1. Preventing Hazards in the Workplace 1.1. Presence of wildlife in the			<b>LO 1. Prepare and maintain farm facilities</b> 1.1. Prevent workplace hazards and environmental implications with	<b>TLE_AFHC9-12OH-IIIa-j-1</b>



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<b>CONTENT</b>	<b>CONTENT STANDARD</b>	<b>PERFORMANCE STANDARD</b>	<b>LEARNING COMPETENCIES</b>	<b>CODE</b>
workplace 1.2. Exposure to fumes and solar radiation 1.3. Adverse weather conditions 1.4. Hazardous substances like fuel, grease, and oil spills 2. Maintenance activities of nursery facilities 3. Safety measures/pre-caution in preparing and maintaining farm			maintenance procedures 1.2. Perform maintenance activities to maximize efficiency and effectiveness of nursery facilities	
<b>QUARTER 4: CONDUCT OF PRE-HORTICULTURAL FARM OPERATIONS</b> <i>(Note: Research components should be included in all activities)</i>				
<b>LESSON 5: MAINTENANCE ACTIVITIES OF FARM FACILITIES (AF)</b>				
1. Maintenance activities of facilities 1.1. Pump house 1.2. Mechanical drier 1.3. Storage house 1.4. Machine shed 1.5. Drainage system 2. Setting up preventive structures during inclement weather 3. Safekeeping of equipment every after use 4. Principle of 5S 5. Securing post-harvest tools			<b>LO 1. Secure tools, farm implements/equipment and facilities</b> 1.1. Perform maintenance activities to maximize efficiency and effectiveness of facilities 1.2. Set up preventive structures during inclement weather 1.3. Store tools, farm implements and equipment according to approve practice	<b>TLE_AFHC9-12AF-IVa-j-1</b>

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**AGRI-FISHERY ARTS – HORTICULTURE**  
(160 hours)

**Course Description:**

This is a course in **HORTICULTURE** leading to **NC II** Qualification consisting of the core competencies that a person must achieve in producing major lowland and semi temperate vegetables.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
<b>INTRODUCTION</b> 1. Concepts and competencies in producing major lowland and semi-temperate vegetables 2. Opportunities in Vegetables Crop Production	The learner demonstrates understanding of core concepts and competencies in producing major lowland and semi-temperate vegetables.	The learner independently demonstrates core competencies in producing major lowland and semi temperate vegetables as prescribed in the TESDA Training Regulation.	1. Explain concepts and perform core competencies on producing major lowland and semi temperate vegetables 2. Explore job opportunities that one can venture into after taking the course	
<b>PERSONAL ENTREPRENEURIAL COMPETENCIES (PECS)</b>				
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 ones 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 horticulture.	<b>LO 1. Develop and Strengthen Personal Competencies and Skills (PECS) needed in Horticulture</b> 1.1. Identify & Assess ones PECS: Characteristics, Attributes, Lifestyle, Skills, Traits 1.2. Identify successful entrepreneurs/employees in the province. 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, development and growth 1.6. Align, strengthen, develop areas based on the results of the PECS Assessment	<b>TLE_PECS9-12-00-1</b>
<b>ENVIRONMENT AND MARKET (EM)</b>				
<b>THE MARKET (The Province)</b> 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 horticulture in the context of the province.	The learner independently identifies the products/services available and the competitors within the province's horticulture market.	<b>LO 1. Recognize and understand the market for horticulture</b> 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	<b>TLE_EM9-12-00-1</b>

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
<b>THE MARKET – PRODUCT DEVELOPMENT</b> 1. Key concepts of developing a product 2. Finding Value 3. Innovation 4. Unique Selling Proposition (USP)	The learner demonstrates understanding of developing a product in Horticulture	The learner independently identifies: the customers of within the Horticulture market.	<b>LO 2. Develop a product for the provincial market.</b> 2.1. Identify what is of “Value” to the customer. 2.2. Identify the Customers 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	<b>TLE_EM9-12-00-2</b>
<b>THE MARKET - SELECTING BUSINESS IDEA</b> 1. Key concepts in Selecting a Business Idea 2. Criteria 3. Techniques	The learner demonstrates understanding of the techniques of selecting business ideas.	The learner independently selects a viable business idea.	<b>LO 3. Select a business idea for the Horticulture market based on the criteria and techniques provided</b> 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	<b>TLE_EM9-12-00-3</b>
<b>THE MARKET – BRANDING</b> Key concepts of Branding	The learner demonstrates understanding of branding and develops a brand for their business idea.	The learner independently generates a brand for their business idea.	<b>LO 4. Develop a brand for the product.</b> 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	<b>TLE_EM9-12-00-4</b>

**QUARTER 1**  
**LESSON : PRODUCE VEGETABLES** *(Note: Research component should be included in the activities)*  
**MODULE 1: PREPARE LAND FOR PLANTING**

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<b>CONTENT</b>	<b>CONTENT STANDARD</b>	<b>PERFORMANCE STANDARD</b>	<b>LEARNING COMPETENCIES</b>	<b>CODE</b>
1. Collection of samples for soil analysis 1.1. Importance of Soil Sampling 1.2. Guidelines in collecting soil samples 1.3. Procedure in Soil Sampling			<b>LO 1. Prepare land for planting</b> 1.1. Collect soil samples for soil analysis	<b>TLE_AFHC9-12PV-Ia-j-1</b>
2. Soil laboratory analysis using 2.1. Soil testing Kit (STK) and 2.2. Soil Laboratory Analysis 2.3. Procedure in soil analysis 2.4. CEC 2.5. NPK ratio			1.2. Conduct soil analysis	
3. Interpretation of the results of soil analysis 3.1. Recommendation based on the manual of the DA standards & procedures 3.2. Basic calculations			1.3. Interpret the result of soil analysis	
4. Farm implements and equipment used in preparing land for planting 4.1. Safety measures in proper use of farm equipments 4.2. Types and function of Farm Tillage Implements 4.3. Advantages of using farm tillage implements			1.4. Choose and use right farm implements and equipment	
5. Proper land preparation using plow and harrow 5.1. Importance of land preparation & tillage 5.2. Common method and tillage for lowland & upland 5.3. Land preparation procedure 5.4. Seedbed/seedplot preparation 5.5. Operation of Farm equipment			1.5. Clear, plow and harrow of the area	
6. Safety precautions in operating farm			1.6. Observe safety precautions in operating	

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
tools and equipment 6.1. Procedure in the use of power tools and equipment 6.2. Safety precaution guidelines in operating farm tools and equipment			farm tools and equipment	
<b>QUARTER 2</b> <b>LESSON : PRODUCE VEGETABLES</b> <i>(Note: Research component should be included in the activities)</i> <b>MODULE 2: GROWING SEEDLING</b>				
1. Characteristics of good quality seeds 1.1 -Damage free 1.2 -True-to-type 1.3 -Viable 1.4 -Free from mixture 1.5 -Free from seed-borne disease 1.6 Types of seed 1.7 Seed certification standard			<b>LO 1. Grow seedlings</b> 1.1. Procure and select good quality seeds	<b>TLE_AFHC9-12PV-IIa-j-2</b>
2. Seed germination test 1.1 Importance of Seed Germination Test 1.2 Methods of Seed Germination Test 2.1.1 Ragdoll Method 2.1.2 Petri Dish 2.1.3 Seed bed 2.1.4 Seedbox 2.3. Procedure in Seed 2.4. Germination Test following the three methods: 2.4.1 Computing Percentage 2.4.2 Seed Germination 2.4.3 Safety precaution in using chemicals			1.2. Conduct seed testing	
3. Composition of growing media 3.1. Importance of 3.2. Growing Media			1.3. Identify and mix components and proportion of different growing media	

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
3.3. Characteristics of a Good Growing Media 3.4. Composition of a Good Growing Media 3.4.1 1 part garden soil 3.4.2 1 part Sieved sand 3.4.3 1 part Compost 3.4.4 1 part Sawdust/Ricehull 3.5. Procedure in proper mixing growing media using the ratio and proportion				
4. Sterilization of growing media 4.1. Importance of sterilizing the growing media 4.2. Methods in sterilizing the growing media 4.2.1 Heat Treatment 4.2.2 Chemical Treatment 4.3. Procedure in sterilizing the growing media			1.4. Sterilize growing media	
5. Sowing Seeds 5.1. Proper seed growing techniques 5.2. Stages and seed germination 5.3. Amount depth of sowing seed 5.4. Importance of seed sowing			1.5. Sow seeds on tray compartments	
6. Pre-cultural Management Practices 6.1. Irrigation system 6.2. Chemical to use in fertilizing and controlling pests 6.3. IPM 6.4. Fert. Management (FPA) 6.5. Safety measures in spraying chemicals 6.6. Calibration of sprayer 6.7. Plant pest, diseases, and			1.6. Perform pre-cultural management practices	

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
treatment 6.8. Vegetable production manual 6.9. Crop Protection				
<b>QUARTER 3</b> <b>LESSON : PRODUCE VEGETABLES</b> <i>(Note: Research component should be included in the activities)</i> <b>MODULE 3: TRANSPLANTING SEEDLINGS</b>				
1. Fertilizer application 1.1. Importance of Fertilizer Application 1.2. Types of Fertilizer 1.3. Sources of Fertilizer 1.4. Methods of Fertilizer Application 1.5. Time and frequency of fertilizer application 1.6. Fertilizer computation 1.7. Fertilizer management safety precaution			<b>LO 1. Transplant seedlings</b>  1.1. Apply fertilizers based on the result of soil analysis	<b>TLE_AFHC9-12PV-IIIa-j-3</b>
2. Mulching 2.1. Importance of mulching 2.2. Kinds of Mulching materials 2.3. Polyethelene plastic film 2.4. Rice straw 2.5. Cut grasses 2.6. Procedure in Applying Mulch 2.7. Characteristics of mulches			1.2. Apply mulching materials	
3. Transplanting seedling 3.1. Distance and depth of planting 3.2. Characteristics of good quality seeds 3.3. Procedures and recommendation on transplanting			1.3. Transplant seedlings following the right recommendation	
4. Management of newly transplanted seedlings techniques in:			1.4. Perform post-planting care on newly transplanted seedlings	

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
4.1. Shading 4.2. Watering				
<b>QUARTER 4</b>				
<b>LESSON : PRODUCE VEGETABLES</b> <i>(Note: Research component should be included in the activities)</i>				
<b>MODULE 4: MAINTAINING GROWTH OF VEGETABLES</b>				
1. Soil cultivation 1.1. Importance of soil cultivation 1.2. Appropriate tools and methods to be used in soil cultivation 1.3. Types of soil cultivation			<b>LO 1. Maintain growth of vegetables</b> 1.1. Apply proper cultivation method for particular crop	<b>TLE_AFHC9-12PV-IVa-j-1</b>
2. Fertilizer application 2.1. Fertilizers and chemical computation 2.2. Recommended rate data 2.3. Methods, time and kinds of application 2.4. Factors to consider in selecting chemicals to use 2.5. Knowledge in the proper application of chemicals 2.6. Calibration of sprayer 2.7. FPA			1.2. Apply fertilizers and chemicals	
3. Irrigation 3.1. Importance of irrigation 3.2. Methods of Irrigation 3.2.1. Over head (mist, sprinkler) 3.2.2. Surface (Furrow, drip, sub surface) 3.3. Safety precaution/measures in proper use of tools and equipment 3.3.1 Setting up drip irrigation			1.3. Select and set-up right irrigation system	
4. Pest control 4.1. IPM			1.4. Determine control measures on specific pests and diseases	



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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
4.2. Importance of control and prevention measures 4.3. Methods of preventing and controlling pests and diseases 4.4. List of pesticides and chemicals to be used 4.5. Crop protection 4.6. Safety measures in spraying chemicals 4.7. Calibration of sprayer 4.8. Plant pest and diseases				
5. Importance of Replanting			1.5. Perform replanting in missing hills	
6. Tools, Materials and Equipment needed in Harvesting 6.1. Different types of tools, materials and equipment 6.2. Parts and functions of specific equipments and tools to be used 6.3. Safety measures 6.4. Uses of different types of tools and equipment			<b>LO 2. HARVESTING CROPS</b>  2.1. Prepare all tools, materials and equipment needed	
7. Harvesting vegetables crops based on maturity indices 7.1. Harvesting time 7.2. Maturity indices methods 7.3. Factors to consider in determining matured vegetable crops			2.2. Determine when to harvest based on the maturity indices	
8. Harvesting vegetable crops 8.1. Time and methods of harvesting vegetable crops 8.2. Techniques and importance of harvesting 8.3. Appropriate packing materials 8.4. Stages of maturity			2.3. Perform harvesting using appropriate materials, tools and equipment	

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**AGRI-FISHERY ARTS – HORTICULTURE**  
**AGRI – FISHERY ARTS – HORTICULTURE (160 hours)**

**Course Description:**

This is a course in **Horticulture** leading to NC II Qualification consisting of the core competencies that a person must achieve in producing fruit bearing crops.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
<p><b>Introduction</b></p> <ol style="list-style-type: none"> <li>1. Introduction</li> <li>2. Concepts and competencies in producing fruit-bearing crops</li> <li>3. Opportunities in producing fruit bearing crops</li> </ol>	<p>The learner demonstrates understanding of core concepts, competencies and opportunities in producing fruit bearing crops including the selection and preparation of site, proper growing and transplanting of seedlings, proper growing of trees and harvesting of fruits.</p>	<p>The learner independently demonstrates core competencies in producing fruit bearing crops as prescribed in the TESDA Training Regulation.</p>	<ol style="list-style-type: none"> <li>1. Explain concepts and perform core competencies on producing fruit bearing crops</li> <li>2. Explore on job opportunities that one can venture after taking the course</li> </ol>	
<b>PERSONAL ENTREPRENEURIAL COMPETENCIES (PECS)</b>				
<ol style="list-style-type: none"> <li>1. Assessment of Personal Competencies and Skills (PECS) vis-à-vis a practicing entrepreneur/ employee in the province. <ol style="list-style-type: none"> <li>1.1. Characteristics</li> <li>1.2. Attributes</li> <li>1.3. Lifestyle</li> <li>1.4. Skills</li> <li>1.5. Traits</li> </ol> </li> <li>2. Analysis of PECS in relation to a practitioner</li> <li>3. Align, strengthen and develop ones PECS based on the results</li> </ol>	<p>The learner demonstrates understanding of one's Personal Competencies and Skills (PECS) in Horticulture.</p>	<p>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 Horticulture.</p>	<p><b>LO 1. Recognize Personal Entrepreneurial Competencies and Skills (PECS) needed in Horticulture</b></p> <ol style="list-style-type: none"> <li>1.1. Assess one's PECS: characteristics, attributes, lifestyle, skills, traits</li> <li>1.2. Assess practitioner's: characteristics, attributes, lifestyle, skills, traits</li> <li>1.3. Compare one's PECS with that of a practitioner /entrepreneur</li> <li>1.4. Align one's PECS with that of a practitioner /entrepreneur</li> </ol>	<b>TLE_PECS9-12-00-1</b>

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
<b>ENVIRONMENT AND MARKET (EM)</b>				
<b>Market (Province)</b> 1. Key concepts of Market 2. Players in the Market (Competitors) 3. Products & services available in the market	The learner demonstrates understanding of the environment and market in Horticulture in one's town/municipality.	The learner independently creates a business vicinity map reflective of potential Horticulture market within the locality/town.	<b>LO 1. Recognize and understand the market in Horticulture</b> 1.1. Identify the players/ competitors within the province 1.2. Identify the different products/services available in the market	<b>TLE_EM9-12-00-1</b>
<b>Market (Customer)</b> 4. Key concepts in Identifying and Understanding the Consumer 5. Consumer Analysis through: 5.1. Observation 5.2. Interviews 5.3. FGD 5.4. Survey			<b>LO 2. Recognize the potential customer/market in Horticulture</b> 2.1. Identify the profile of potential customers 2.2. Identify the customer's needs and wants through consumer analysis 2.3. Conduct consumer/market analysis	<b>TLE_EM9-12-00-2</b>
6. Generating Business Ideas 6.1. Key concepts of Generating Business Ideas 6.2. Knowledge & Skills, Passions, Interests 6.3. New application 6.4. Irritants 6.5. Striking ideas (new concept) 6.6. Serendipity Walk			<b>LO 3. Create new business ideas in Horticulture business by using various techniques</b> 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	<b>TLE_EM9-12-00-3</b>

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	
<b>QUARTER 1</b>					
<b>LESSON 1 : PRODUCE FRUIT BEARING CROP (FB)</b> <i>(Note: Research component should be included in all activities)</i>					
<b>Module: Preparing site for planting</b>					
<ol style="list-style-type: none"> <li>1. Site assessment in terms of soil physicochemical properties.</li> <li>2. Procedures in site assessment</li> <li>3. Factors affecting the site for planting fruit-bearing crops               <ol style="list-style-type: none"> <li>3.1. climactic requirement</li> <li>3.2. topography</li> <li>3.3. accessibility</li> <li>3.4. Water supply</li> <li>3.5. Facilities/amenities</li> <li>3.6. Socio-economic condition</li> <li>3.7. Soil</li> </ol> </li> <li>4. Type               <ol style="list-style-type: none"> <li>4.1. Drainage</li> <li>4.2. Depth</li> <li>4.3. Fertility/organic matter content</li> <li>4.4. pH level</li> </ol> </li> </ol>	<p>The learner demonstrates understanding of concepts and competencies in site assessment, staking following a prescribed method of planting, setting up irrigation systems and digging of holes.</p>	<p>The learner independently demonstrates proper site assessment and selection, staking following the various planting methods, setting irrigation system and preparing the site for planting fruit bearing trees.</p>	<p><b>LO 1. Assessment of site in terms of soil physicochemical properties and factors limiting space and root zone volume</b></p> <ol style="list-style-type: none"> <li>1.1. Assess the site to determine any soil and other environmental factors that might limit tree growth</li> <li>1.2. Assess the site for other relevant factors that might affect tree growth</li> </ol>	<p><b>TLE_AFHC9-12FB-Ia-c-1</b></p>	
<ol style="list-style-type: none"> <li>5. Staking the site               <ol style="list-style-type: none"> <li>5.1. Materials and tools used for staking</li> <li>5.2. Types of planting system                   <ol style="list-style-type: none"> <li>5.1. Square</li> <li>5.2. Quincux or diagonal</li> <li>5.3. Hexagonal or triangular</li> <li>5.4. Contour system</li> </ol> </li> <li>5.3. Interpreting and reading planting system</li> <li>5.4. Procedures in staking (field lay-outing)</li> </ol> </li> </ol>			<p><b>LO 2. Staking the site</b></p> <ol style="list-style-type: none"> <li>2.1. Prepare and use materials and tools for staking according to plant requirements and manual</li> <li>2.2. Interpret planting system according to types of planting system</li> <li>2.3. Stake the site according to standard method and tree species requirements</li> </ol>		<p><b>TLE_AFHC9-12FB-Id-e-2</b></p>
<ol style="list-style-type: none"> <li>6. <b>Installation of irrigation system</b> <ol style="list-style-type: none"> <li>6.1. Materials and equipment for setting up irrigation based on work requirements and manual</li> <li>6.2. Setting up irrigation system (drip irrigation) according to site specification</li> </ol> </li> </ol>			<p><b>LO 3. Installation of Irrigation System</b></p> <ol style="list-style-type: none"> <li>3.1. Prepare materials and equipment for setting up irrigation based on work requirements and manual</li> <li>3.2. Set up drip irrigation systems according to standard procedures</li> </ol>		

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
<p>7. <b>Digging holes</b>            7.1. Digging tools and equipment            7.2. Proper digging of holes based on root zone volume of the plant and space available in the area</p>			<p><b>LO 4. Digging holes</b>            4.1. Prepare digging materials and equipment            4.2. Dig holes based on root zone volume of the plant and space available in the area</p>	<b>TLE_AFHC9-12FB-Ij-4</b>
<p><b>QUARTER 2</b>  <b>LESSON : PRODUCE FRUIT BEARING CROPS (FB)</b> <i>(Note: Research component should be included in all activities)</i>  <b>Module: Growing Seedlings</b></p>				
<p>1. <b>Gathering and preparation of growing media component</b>            1.1. Growing media components (Types of soil)                1.1.1. garden soil (1 part)                1.1.2. compost (1 part)                1.1.3. sawdust/ricehull (1 part)                1.1.4. coconut coir (1 part)            1.2. Preparation of growing media based on desired proportions and established procedure            1.3. Mixing growing media</p>	<p>The learner demonstrates understanding of concepts and competencies in growing fruit bearing tree seedling and eventual harvest of fruits</p>	<p>The learner independently demonstrates proper growing media preparation and appropriate harvesting techniques.</p>	<p><b>LO 1. Gathering and preparation of growing media</b>            1.1. Select and gather proper growing media component            1.2. Prepare growing media components according to established procedures and manuals            1.3. Mix growing media components according to desired proportions and established procedures</p>	<b>TLE_AFHC9-12FB-IIa-1</b>
<p>2. Hastening germination by seed treatment            2.1. Seed and seedling morphology            2.2. Methods of hastening seed germination                2.2.1. Seed scarification                2.2.2. Seed stratification            2.3. Different seed treatment methods to break dormancy</p>			<p><b>LO 2. Hastening seed germination by seed treatment</b>            2.1. Identify seed parts based on plant species and tree growing manual            2.2. Determine seedling morphology based on plant species and tree growing manual            2.3. Perform different methods of seed germination according to plant species and tree growing            2.4. Perform seed treatment based on plant requirements and standard procedures            2.5. Speed up seed germination according to standard procedures</p>	<b>TLE_AFHC9-12FB-IIb-c-2</b>

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<b>CONTENT</b>	<b>CONTENT STANDARD</b>	<b>PERFORMANCE STANDARD</b>	<b>LEARNING COMPETENCIES</b>	<b>CODE</b>
<b>3. Performing bagging operations</b> 3.1. Preparation of materials and tools for bagging 3.2. Bagging procedures of seeds/seedlings			<b>LO 3. Performing bagging operations</b> 3.1. Prepare materials and tools for bagging operation according to workplace procedures 3.2. Perform bagging operation according to standard procedures	<b>TLE_AFHC9 -12FB-IIId-3</b>
<b>4. Sowing seeds in plastic bags</b> 4.1. Preparation of plastic bags for sowing 4.2. Procedures of sowing of seeds in plastic bags			<b>LO 4. Sowing seeds in plastic bags</b> 4.1. Prepare plastic bags according to workplace procedures 4.2. Sow seeds on individual plastic bags based on standard procedures	<b>TLE_AFHC9 -12FB-IIe-4</b>
<b>5. Determination of fruit maturity</b> 5.1. Maturity indices of various fruits 5.1.1. Attainment of desirable size of the fruits 5.1.2. Change in color 5.1.3. Change in physical appearance 5.1.4. Change in odor 5.2. Procedures in determining maturity indices 5.2.1. Fruit morphology 5.2.2. Stages of fruit development			<b>LO 5. Determination of fruit maturity</b> 5.1. Identify the maturity indicators per fruits as described in horticultural manual 5.2. Determine fruit maturity in accordance to the prescribed procedures	<b>TLE_AFHC9 -12FB-IIIf-g-5</b>
<b>6. Preparation of appropriate harvesting materials and tools</b> 6.1. Different harvesting tools and materials 6.1.1. Pickers 6.1.2. Liners 6.1.3. Basket or plastic crates 6.2. Preparation of harvesting tools and material 6.3. Safety precaution in preparing harvesting tools			<b>LO 6. Preparation of of appropriate harvesting materials and tools</b> 6.1. Identify the appropriate harvesting materials and tools according to crop manuals and harvesting requirements 6.2. Prepare appropriate harvesting materials and tools according to work requirements, standard procedures and manuals	<b>TLE_AFHC9 -12FB-IIh-6</b>

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
<b>7. Harvesting of fruits</b> 7.1. Pre-harvest operations 7.2. Proper time and conditions for harvesting fruits 7.3. Methods of harvesting fruits 7.3.1. Manual 7.3.2. Mechanical 7.4. Safety precaution in using harvesting tools			<b>LO 7. Harvesting fruits</b> 7.1. Identify different harvesting methods according to crop manual 7.2. Demonstrate proper harvesting of fruits according to crop requirements and crop manual	<b>TLE_AFHC9-12FB-IIIj-7</b>
<b>QUARTER 3</b>				
<b>LESSON : PRODUCE FRUIT BEARING CROPS (FB)</b> <i>(Note: Research component should be included in all activities)</i>				
<b>Module: Transplanting seedlings</b>				
1. Application of Basal Fertilizer 1.1. Fertilizer computation for fruit bearing trees at different stages of growth 1.2. Proper application of basal fertilizer 1.3. Application of inoculants (Mycorrhizal application) 1.4. Procedures in fertilizer application	The learner demonstrates understanding of concepts and competencies in transplanting seedling to produce fruit bearing crops with emphasis on basal fertilizer application, proper transplanting of seedlings and performing the proper procedure in top pruning.	The learner independently demonstrates proper basal fertilizer application, seedling transplanting and proper procedure in top pruning.	<b>LO 1. Application of basal fertilizer</b> 1.1. Compute fertilizer rate according to plant requirements and standard formula 1.2. Apply basal fertilizer based on the recommended rate per seedlings and manual on fruit tree fertilizer requirement 1.3. Apply fertilizer according to established procedures and PPE and OHS requirements 1.4. Apply inoculants properly following standard procedure	<b>TLE_AFHC9-12FB-IIIa-e-1</b>
2. Planting of seedlings 2.1. Planting methods 2.2. Procedures if planting seedlings 2.3. Placing the seedlings in the prepared holes 2.4. Covering the roots 2.5. Watering of newly planted seedlings 2.6. Shading of newly planted seedlings 2.7. Providing seedling support			<b>LO 2. Planting of seedlings</b> 2.1. Determine appropriate planting methods according to plant species and requirements 2.2. Plant seedlings properly according to established procedures and fruit bearing tree manual of production 2.3. Cover properly the root system in accordance with established procedures and manual on fruit bearing tree production 2.4. Water the newly planted seedlings according to plant requirements	<b>TLE_AFHC9-12FB-IIIif-g-2</b>

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
3. Performing top pruning 3.1. Preparing and using tools for pruning 3.2. Prevention of rapid transpiration in relation to top pruning 3.3. Pruning procedure			<b>LO 3. Performing top pruning</b> 3.1. Prepare and use pruning tools in accordance with the manual and safety requirements. 3.2. Demonstrate top pruning based on plant requirement and fruit bearing tree manual 3.3. Execute top pruning procedure properly in accordance with established procedures. 3.4. Transplant seedlings following the right recommendation 3.5. Perform post-planting care on newly transplanted seedlings	<b>TLE_AFHC9-12FB-IIIh-j-3</b>
<b>QUARTER 4</b> <b>LESSON: PRODUCE FRUIT BEARING CROPS (FB)</b> <i>(Note: Research component should be included in all activities)</i> <b>Module: Growing trees</b>				
1. Application of fertilizer materials based on needs and recommendation rates 1.1. Nutrition requirements of fruit trees 1.2. Fertilizer rate computations 1.3. Application of fertilizer 1.4. Application of flower inducer 1.5. Safety precaution in handling and using chemicals following the FPH, DA codes and environmental regulations and OHS and PPE requirements	The learner demonstrates understanding of concepts and competencies in growing trees with emphasis on proper fertilizer application, pruning, application of tar, thinning and control of pest and diseases of fruit bearing trees.	The learner independently demonstrates (1) proper fertilizer application for fruit bearing trees, (2) judicious pruning and thinning, and (3) prescribing appropriate pest and disease control measures.	<b>LO 1. Application of fertilizer and other chemicals on trees</b> 1.1. Apply fertilizer materials based on plant requirements and recommended rate using the standard formula 1.2. Apply flower inducer following recommended kinds and rates and standard procedures 1.3. Handle chemicals following the FPH, FDA codes and environmental regulations and OHS and PPE requirements	<b>TLE_AFHC9-12FB-IVa-c-1</b>
2. Pruning and thinning of trees 2.1. Preparation and using tools in pruning and thinning 2.2. Procedures in pruning and thinning 2.3. Safety precautions in using the tools			<b>LO 2. Pruning and thinning of trees</b> 2.1. Prepare and use appropriate tools in pruning and thinning according to established procedures and manuals 2.2. Perform pruning and thinning operations according to fruit tree species and standard procedure	<b>TLE_AFHC9-12FB-IVd-2</b>



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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
3. Application of tar or paints to cuts			<b>LO 3. Apply tar or paint properly to cuts after pruning</b> 3.1. Application of tar or paints to cuts	<b>TLE_AFHC9-12FB-IVe-3</b>
4. Control of pest and disease in fruit bearing trees 4.1. Common pest and diseases of fruit-bearing trees 4.2. Pest and disease control for fruit bearing trees 4.3. Safety precaution in handling and using chemicals			<b>LO 4. Control of pest and diseases of fruit bearing tress</b> 4.1. Identify pest and diseases of fruit bearing trees according to sign and symptoms 4.2. Employ appropriate control measures according to plant requirements and established procedure 4.3. Apply pesticides in accordance with DA Codes and environmental regulations and OHS and PPE requirements	<b>TLE_AFHC9-12FB-IVf-j-4</b>

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**AGRI-FISHERY ARTS – HORTICULTURE**  
(160 hours)

**Course Description:**

This is a course in **Horticulture** leading to **NC II** Qualification consisting of the core competencies that a person must achieve in producing major tropical fruits, lowland, and semi temperate vegetables.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
<b>INTRODUCTION</b>				
<ol style="list-style-type: none"> <li>Concepts and competencies on producing major tropical fruits, lowland, and semi temperate vegetables</li> <li>Opportunities in Tropical Fruits and Vegetables Crop Production</li> </ol>	The learner demonstrates understanding of core concepts and competencies on producing major tropical fruits, lowland, and semi temperate vegetables.	The learner independently demonstrates core competencies on producing major tropical fruits, lowland and semi temperate vegetables as prescribed in the TESDA Training Regulation.	<ol style="list-style-type: none"> <li>Explain concepts and perform core competencies on producing major tropical fruits, lowland, and semi temperate vegetables</li> <li>Explore on job opportunities that one can venture after taking the course</li> </ol>	
<b>PERSONAL ENTREPRENEURIAL COMPETENCIES (PECS)</b>				
<ol style="list-style-type: none"> <li>Assessment of Personal Entrepreneurial Competencies and Skills (PECS) vis-à-vis a practicing entrepreneur/employee <ol style="list-style-type: none"> <li>Characteristics</li> <li>Attributes</li> <li>Lifestyle</li> <li>Skills</li> <li>Traits</li> </ol> </li> <li>Analysis of one's PECS</li> </ol>	The learner demonstrates 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 Horticulture	<b>LO 1. Recognize Personal Entrepreneurial Competencies and Skills (PECS) needed in Horticulture</b> <ol style="list-style-type: none"> <li>Assess one's PECS: characteristics, attributes, lifestyle, skills, traits</li> <li>Assess practitioner's: characteristics, attributes, lifestyle, skills, traits</li> <li>Compare one's PECS with that of a practitioner /entrepreneur</li> </ol>	<b>TLE_PECS9-12-00-1</b>
<b>ENVIRONMENT AND MARKET (EM)</b>				
<ol style="list-style-type: none"> <li>Key concepts of Environment and Market</li> <li>Products &amp; services available in the market</li> <li>Differentiation of products and services</li> <li>Customers and their buying habits</li> <li>Competition in the market</li> <li>SWOT Analysis</li> </ol>	The learner demonstrates understanding of environment and market that relates with a career choice in Horticulture.	The learner independently generates a business idea based on the analysis of environment and market in Horticulture	<b>LO 1. Generate a business idea that relates with a career choice in Horticulture</b> <ol style="list-style-type: none"> <li>Conduct SWOT analysis</li> <li>Identify the different products/services available in the market</li> <li>Compare different products/services in computer hardware servicing business</li> <li>Determine the profile potential customers</li> <li>Determine the profile potential competitors</li> <li>Generate potential business idea based on the SWOT analysis</li> </ol>	<b>TLE_EM9-12-00-1</b>

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**JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD TRACK**  
**AGRI-FISHERY ARTS – HORTICULTURE**

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
<b>Quarter 1</b>				
<b>Lesson 1: Prepare post-harvest operation, tools, materials, equipment and facilities</b>				
1. Prepare post-harvest operations for major tropical fruits 2. Specify post-harvest materials and tools 3. Properties of materials	The learner demonstrates understanding of the procedures in post-harvest operation in major tropical fruits.	The learner independently performs post-harvest operations of major tropical fruits.	<b>LO 1. Prepare post-harvest operation tools, materials, supplies, materials, equipment, and facilities</b> 1.1. Identify post-harvest materials, equipment, tools, and facilities 1.2. Prepare the materials, tools, and equipment for harvesting	<b>TLE_AFHC9-12PH-Ia-c-1</b>
<b>Lesson 2: Perform post-harvest operations in major tropical fruits</b>				
1. Conduct post-harvest operations in major tropical fruits 2. Post-harvest technology of tropical fruits 3. Post-harvest treatments of tropical fruits		The learner independently performs post-harvest operations of major tropical fruits.	<b>LO 2. Perform post-harvest operations in major tropical fruits</b> 2.1. Classify harvested fruits according to sizes 2.2. Identify post-harvest technology of tropical fruits 2.3. Identify different post-harvest treatments of tropical fruits 2.4. Maintain quality fruits 2.5. Observe Occupational Health and Safety Procedures	<b>TLE_AFHC9-12PH-Id-f-2</b>
<b>Lesson 3: Perform packaging, labeling, storing, and marketing</b>				
1. Perform post-harvest operations for major tropical fruits. 2. Practices in packaging and labeling of tropical fruits. 3. Practices in storing of tropical fruits. 4. Practices in marketing tropical fruits.		The learner independently performs post-harvest operations of major tropical fruits.	<b>LO 3. Perform packaging, labeling, storing, and marketing</b> 3.1. Identify practices in packaging, labeling, storing, and marketing of tropical fruits 3.2. Identify practices in storing of tropical fruits 3.3. Identify practices in marketing of major tropical fruits	<b>TLE_AFHC9-12PH-If-j-3</b>
<b>Quarter 2:</b>				
<b>Lesson 1: Prepare post-harvest operations for major lowland and semi-temperate vegetable crops</b>				
1. Prepare post-harvest operation for major lowland and semi-temperate vegetables. 2. Practices in post-harvest 3. Different tools used in post-harvest	The learner demonstrates understanding of post harvest operation for major lowland and temperate vegetable	The learner independently performs post-harvest operations for major lowland and semi-temperate vegetable crops.	<b>LO 1. Prepare post-harvest operations, tools, supplies, equipment, and facilities of lowland and semi-temperate vegetable crops</b> 1.1. Identify post-harvest operations for major lowland and semi-temperate vegetables	<b>TLE_AFHC9-12PH-IIa-d-1</b>

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**AGRI-FISHERY ARTS – HORTICULTURE**

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
	crops.		1.2. Select appropriate tools used in post-harvest operations	
<b>Lesson 2: Perform post-harvest practices</b>				
<ol style="list-style-type: none"> <li>1. Conduct post-harvest operation in lowland and semi-temperate vegetable crops</li> <li>2. Properties of appropriate packaging materials</li> </ol>	The learner demonstrates understanding of packaging, labeling, storing, and marketing of vegetables.	The learner independently performs post-harvest operations of lowland and semi-temperate vegetable crops.	<b>LO 2. Post-harvest operations for major lowland and semi-temperate vegetable crops.</b> <ol style="list-style-type: none"> <li>2.1. Identify different practices in packaging vegetables</li> <li>2.2. Follow the procedures in post-harvest handling of lowland and semi-temperate vegetables</li> <li>2.3. Identify different properties of materials in packaging vegetables</li> <li>2.4. Maintain quality of vegetables</li> <li>2.5. Observe Occupational Health and Safety Procedures</li> </ol>	<b>TLE_AFHC9-12PH-IIe-h-2</b>
<b>Lesson 3: Perform packaging, labeling, storing, and marketing</b>				
<ol style="list-style-type: none"> <li>1. Practices in packaging lowland and semi-temperate vegetables</li> <li>2. Practices in storing lowland vegetables</li> <li>3. Practices in marketing vegetables</li> </ol>		The learner independently performs post-harvest operations for major lowland and semi-temperate vegetable crops.	<b>LO 3. Post-harvest operation of lowland vegetables.</b> <ol style="list-style-type: none"> <li>3.1. Perform packaging in lowland and semi-temperate vegetables</li> <li>3.2. Identify practices in packaging</li> <li>3.3. Identify practices in storing lowland vegetables</li> <li>3.4. Identify practices in marketing lowland and semi-temperate vegetables</li> </ol>	<b>TLE_AFHC9-12PH-IIi-j-3</b>

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AGRI-FISHERY ARTS – HORTICULTURE**

<b>GLOSSARY</b>	
Basal Fertilizer	Basal in terms of fertilizer can only refer to the amount of nutrients needed in the soil applied before crops are planted.
Climactic requirement	The required prevailing conditions of a place ones a period of time for a specific horticultural crop.
Contour	The practice of tilling sloped land along lines of consistent elevation in order to conserve rainwater and to reduce soil losses from surface erosion (2) It is generally followed on the hills where the plants are planted along the contour across the slope. It particularly suits to land with undulated topography, where there is greater danger of erosion and irrigation of the orchard is difficult. The main purpose of this system is to minimize land erosion and to conserve soil moisture so as to make the slope fit for growing fruits and plantation crops. The contour line is so designed and graded in such a way that the flow of water in the irrigation channel becomes slow and thus finds time to penetrate into the, soil without causing erosion.
DA	Department of Agriculture
Dormancy	Is a period in an organism's life cycle when growth, development, and (in animals) physical activity are temporarily stopped.
Drainage system	a system of watercourses or drains for carrying off excess water
Farm Tillage	general tilling of the soil
Flower Inducer	Stimulates flower growth during the resting year so the tree produces annually (2) Flower inducers can also increase the number of viable blooms during the natural fruit-producing year, for an increase in production; they can also be used on varieties that provide a crop every year, to boost harvest. The inducers work best on healthy, mature trees that are under 10 years of age.
FPA	Fertilizer and Pesticide Authority
Germination	Germination is the process by which plants grows from a seedling to produce a flower. The most common example of germination is the sprouting of a seedling from a seed of anangiosperm or gymnosperm.
Growing Media	Materials utilized for planting crops or raising seedlings
Harrow	a farm implement consisting of a heavy frame with sharp teeth or upright disks, used to break up and even off plowed ground.
Hexagonal or triangular	In this method, the trees are planted in each corner of an equilateral triangle. This way six trees form a hexagon with the seventh tree in the centre. Therefore this system is also called as 'septule' as a seventh tree is accommodated in the centre of hexagon. This system provides equal spacing but it is difficult to layout.
Inoculants	A substance (a virus or toxin or immune serum) that is introduced into the body to produce or increase immunity to a particular disease.
Liners	Referring to trays of very young plants, usually grown for sale to retailers or wholesalers, who then grow them to a larger size before selling them to consumers. Liners are usually grown from seed, but may also be grown from cuttings or tissue culture. They are grown in plastic trays with many "cells," each of which contains a single liner plant. (2) Devices used for making lines.
Machine shed	a small hut, light shelter for machine

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Maturity Indices	Signs that suggest that the maturity of a crop has come.
Mechanical drier	a machine for dehydrating by direct heat, drafts of hot air, centrifugal action
NPK	is used to label fertilizer based on the relative content of the chemical elements nitrogen(N), phosphorus (P), and potassium (K) that are commonly used in fertilizers. The N value is the percentage of elemental nitrogen by weight in the fertilizer. The values for P and K represent the amount of oxide in the form of P <sub>2</sub> O <sub>5</sub> and K <sub>2</sub> O that would be present in the fertilizer if all the elemental phosphorus and potassium were oxidized into these forms.
Physicochemical	of or pertaining to both physical and chemical properties, changes, and reactions.
Pickers	A tool or machine or human being that picks fruits, trashes, etc.
Planting board	board with holes for dropping seeds into the soil at given distances or for marking distances when sowing or transplanting in the field or plots.
Plow	farm implement consisting of a heavy blade at the end of a beam, usually hitched to a draft team or motor vehicle and used for breaking up soil and cutting furrows in preparation for sowing.
Pruning	The art of cutting off twigs from branches which are not needed to encourage fruiting.
Pump house	a house where pumps (e.g. to irrigate) are installed and operated
Quincux or diagonal	This is the square method but with one more plant in the centre of the square. This will accommodate double the number of plants, but does not provide equal spacing. The central (filler) tree chosen may be a short lived one. This system can be followed when the distance between the permanent trees is more than 10m. As there will be competition between permanent and filler trees, the filler trees should be removed after a few years when main trees come to bearing.
Root Zone	The area where a low-angle thrust fault steepens and descends into the crust. The source of the root of a fold nappe. (2) the area where roots are concentrated in the soil.
Seed and seedling morphology	The anatomical structures of seeds and seedlings
Seed scarification	(1) involves cutting the seed coat using abrasion, thermal stress, or chemicals to encourage germination; (2) means scratching or nicking the seed coat (1) it increases the number of germinated seeds which are vulnerable to extreme weather conditions. Once scarified, most seed will germinate quickly and the seedling will require water. You must be able to water if you are going to scarify the seed.
Seed stratification	Is the process of pre-treating seeds to simulate natural winter conditions that a seed must endure before germination. (2) the formation of thin layer of seed tissues.
Seedbed	a plot of land in which seeds or seedlings are grown before being transplanted; a bed of soil cultivated for planting seeds.
Seedlings	A young plant, especially one raised from seed and not from a cutting.
Seedplot	old-fashioned term for seedbed; a piece of ground in which seeds are sown to produce plants for transplanting; a piece of nursery-ground; hence, figuratively, a nursery or hotbed.

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Socio-economic	Combined social and economic condition
Soil analysis	is used to determine the level of nutrients found in a soil sample; is a comprehensive test that measures the level of nutrients in the soil. The analysis is used to assess the fertility of the soil and to determine ways to increase fertility levels.
Soil cultivation	is a practice which is designed to improve the condition of the soil prior to establishing crops or decorative plants. Cultivation is an important step in gardening or farming which can determine whether or not plants will thrive.
Soil Sampling	judging the quality of soil by collecting representative samples from different spots within a particular field
Soil testing Kit (STK)	a kit that may be purchased for home testing of soil samples.
Solar radiation	is radiant energy emitted by the sun from a nuclear fusion reaction that creates electromagnetic energy. The spectrum of solar radiation is close to that of a black body with a temperature of about 5800 K.
Square	In this system, trees are planted on each corner of a square whatever may be the planting distance. This is the most commonly followed system and is very easy to layout. The central place between four trees may be advantageously used to raise short lived filler trees. This system permits inter cropping and cultivation in two directions.
Staking	a piece of wood or metal pointed at one end for driving into the ground as a marker, fence pole, or tent peg
Storage house	a place where things are stored
Thinning	The removal / uprooting of seedlings to lessen the population.
Tillage	is the agricultural preparation of soil by mechanical agitation of various types, such as digging, stirring, and overturning
Topography	(1) is the rise and fall of the land (2) is a measurement of elevation (3) the general feature of the surface of the soil.
Wildlife	wild animals and vegetation, especially animals living in a natural, undomesticated state.

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**Code Book Legend**

**Sample: TLE\_AFHC9-12PH-IVi-j-3**

LEGEND		SAMPLE		DOMAIN/ COMPONENT	CODE
<b>First Entry</b>	Learning Area and Strand/ Subject or Specialization	Technology and Livelihood Education_Agri-Fishery Horticulture	<b>TLE_AFHC9-12</b>	Personal Entrepreneurial Skills	PECS
	Grade Level	Grades 9/10/11/12		Environment and Marketing	EM
<b>Uppercase Letter/s</b>	Domain/Content/ Component/ Topic	Post Harvest Operations	<b>PH</b>	Produce Fruit Bearing Crops	FB
				Post Harvest Operations	PH
			<b>-</b>		
<b>Roman Numeral</b> <i>*Zero if no specific quarter</i>	Quarter	Fourth Quarter	<b>IV</b>	Technology-Livelihood Education and Technical-Vocational Track specializations may be taken between Grades 9 to 12.	
<b>Lowercase Letter/s</b> <i>*Put a hyphen (-) in between letters to indicate more than a specific week</i>	Week	Week nine to ten	<b>i-j</b>	Schools may offer specializations from the four strands as long as the minimum number of hours for each specialization is met.	
			<b>-</b>		
<b>Arabic Number</b>	Competency	Perform packaging in lowland and semi-temperate vegetables	<b>3</b>	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.	



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 AGRI-FISHERY ARTS – HORTICULTURE  
 SAMPLE AGRICULTURE AND FISHERY ARTS CURRICULUM MAP**

No.	Grade 7/8 (Exploratory)	Grade 9	Grade 10	Grade 11	Grade 12
1	<b>EXPLORATORY</b>	<b>Crop Production (NC I)</b>	<b>4 semesters</b>	<b>*Landscape Installation and Maintenance (NC II)</b>	
2				<b>4 semesters</b>	
3				<b>*Pest Management (NC II)</b>	
4				<b>4 semesters</b>	
5				<b>*Rice Machinery Operation (NC II)</b>	
6		<b>4 semesters</b>			
7		<b>*Organic Agriculture (NC II)</b>			
8		<b>4 semesters</b>		<b>*Artificial Insemination: Swine (NC II)</b>	
9		<b>Animal Production (NC II)</b>		<b>2 sems</b>	
10		<b>6 semesters</b>		<b>*Artificial Insemination: Ruminants (NC II)</b>	
11		<b>8 semesters</b>		<b>2 sems</b>	
12		<b>*Slaughtering Operation</b>		<b>2 sems</b>	
13		<b>Horticulture (NC II)</b>		<b>8 semesters</b>	
	<b>Food (Fish) Processing (NC II)</b>		<b>8 semesters</b>		
	<b>Aquaculture (NC II)</b>		<b>8 semesters</b>		
	<b>*Fish Wharf Operation (NC I)</b>		<b>2 sems</b>		

\*Please note that these subjects have prerequisites mentioned in the CG.