

K to 12 TECHNOLOGY AND LIVELIHOOD EDUCATION

**AGRICULTURE / FISHERY – AQUACULTURE
(Exploratory)**

Content Standard	Performance Standard	Learning Competencies	Project/ Activities	Assessment	Duration
LESSON 1: USING FARM/FISHERY TOOLS AND EQUIPMENT					
<p><i>Demonstrate understanding of/on:</i></p> <ul style="list-style-type: none"> Farm/Fishery tools Handheld tools used in aquaculture <ul style="list-style-type: none"> (ex. Secchi discs, salino meter, digging blade, cutting tools etc.) Safety practices during operations of farm/fishery tools 	<ol style="list-style-type: none"> Appropriate farm/fishery tools are identified according to requirements. Farm/fishery tools are checked for faults and defective tools are reported in accordance with farm procedures. 	<p>LO1. Select and use farm tools.</p>	<ol style="list-style-type: none"> Drawing farm/fishery tools and identify its uses. Hands-on demonstration on use of aquaculture handheld tools (simple). Checking the available farm/fishery tools in your school and identify faults or defects. 	<ul style="list-style-type: none"> Performance test Written Test 	4 hours
<ul style="list-style-type: none"> Farm/Fishery equipment Motorized equipment <ul style="list-style-type: none"> (ex. Water pump) Electrical equipment <ul style="list-style-type: none"> (ex. paddle wheel, light) Manual of farm/fishery equipment and specifications , calibration and uses/functions Aquaculture Facilities Fish tank Fish pen Fish cage Fishpond 	<ol style="list-style-type: none"> Appropriate farm/fishery equipment and facilities are identified. Instructional manual of farm/fishery equipment and facilities are carefully read prior to operation. Pre-operation check-up is conducted in line with manufacturers' manual. Faults in farm/fishery equipment and facilities are identified and reported in line with aquaculture procedures. 	<p>LO2. Select and operate farm equipment.</p>	<ol style="list-style-type: none"> Reading the operation manual of a given equipment. Demonstrating the use of a given farm/fishery and equipment. Checking farm equipment for faults or defects and reporting to the appropriate person for repair/replace. 	<ul style="list-style-type: none"> Performance test Written Test 	4 hours

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<ul style="list-style-type: none"> • Pre-operation and check-up • Safety practices in using farm/fishery equipment and facilities 	<ol style="list-style-type: none"> 5. Farm/Fishery equipment and facilities are used according to its function. 6. Safety procedures are followed. 		<ol style="list-style-type: none"> 4. Constructing a typical miniature different aquaculture facilities that are extensively and/or intensively used (by group of students). 		
<ul style="list-style-type: none"> • Preventive maintenance <ul style="list-style-type: none"> ➤ Safety measures and practices in cleaning and storing for different farm/fishery tools, equipment and facilities. ➤ Upkeep of equipment 	<ol style="list-style-type: none"> 1. Tools, equipment and facilities are cleaned immediately after use in line with aquaculture procedures. 2. Routine check-up and maintenance are performed. 3. Tools and equipment are stored in designated areas in line farm procedures. 	LO3. Perform preventive maintenance.	<ol style="list-style-type: none"> 1. Making a listing of procedures on cleaning and storing farm tools and equipment. 2. Demonstrating how to clean and check farm tools and equipment (regularly especially every after use for preventive maintenance). 3. Demonstrating the proper procedure in storing farm tools and equipment. 	<ul style="list-style-type: none"> • Written Test • Performance test 	4 hours

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LESSON 2: PERFORMING ESTIMATION AND BASIC CALCULATION					
<p><i>Demonstrate understanding of/on:</i></p> <ul style="list-style-type: none"> • Problem solving procedures (formulas) • Basic mathematical operations • Cost estimation of aquaculture facility construction and development. • Calendar of activities 	<ol style="list-style-type: none"> 1. Job requirements are identified from written or oral communications. 2. Quantities of materials and resources required to complete a work task are estimated. 3. Time needed to complete a work activity is estimated. 4. Estimate of materials and resources are reported to appropriate person. 	<p>LO1. Perform estimation.</p>	<ol style="list-style-type: none"> 1. Visiting the available aquaculture facility in your school and list down possible job requirement for further development. 2. Making a program of work and schedule and cost estimate for the development of a certain facility. 3. Formulating a fish diet with the desired crude protein and available ingredients 	<ul style="list-style-type: none"> • Written test • Performance test 	<p>4 hours</p>
<ul style="list-style-type: none"> • Basic mathematical operations • Systems of measurement • Units of measurement (ex. Dimensions of aquaculture site) • Conversion of units • Fractions and decimals • Percentages and ratios (ex. Feed conversion ratio) • Simple record keeping 	<ol style="list-style-type: none"> 1. Calculations to be made are identified according to job requirements. 2. Systems and units of measurement to be followed are ascertained. 3. Appropriate operations are used to comply with the instruction. 4. Result obtained is reviewed and thoroughly checked. 	<p>LO2. Perform basic workplace calculations.</p>	<ol style="list-style-type: none"> 4. Measuring the area of the given facility in your school 	<ul style="list-style-type: none"> • Written Test • Performance test 	<p>4 hours</p>

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LESSON 3: DRAWING THE LAYOUT PLAN FOR PONDS, TANKS, PENS AND CAGES					
<p><i>Demonstrate understanding of/on:</i></p> <ul style="list-style-type: none"> • Different pond designs • Different compartments • Procedure on determining gate locations • Types of dikes • Characteristics of water supply canal • Suggested locations of stock room and other farm facilities 	<ol style="list-style-type: none"> 1. Different compartments of pond are identified. 2. Signs and symbols of plan are used according to fishpond engineering standards. 3. Lay out of different pond designs are drawn according to established procedures. 	<p>LO1. Draw layout plan for ponds.</p>	<ol style="list-style-type: none"> 1. Visiting and checking design of fishponds in your school 2. Drawing the layout of a fishpond using the given system, ratio and scale, support system and other farm facilities must also be stipulated in the design. 	<ul style="list-style-type: none"> • Written test • Performance test 	<p>4 hours</p>
<ul style="list-style-type: none"> • Characteristic of different shapes of tanks • Different life support system for tanks 	<ol style="list-style-type: none"> 1. Different life support systems for tanks are identified. 2. Signs and symbols of plan are used according to fishpond engineering standards. 3. Lay out of different tank designs are drawn according to established procedures. 	<p>LO2. Draw layout plan for tanks.</p>	<ol style="list-style-type: none"> 1. Drawing the layout of tank; the size, shape, depth of the tank, life support system and other farm facilities must be stipulated in the design to conform the characteristic of the fish. 	<ul style="list-style-type: none"> • Written test • Performance test 	<p>4 hours</p>

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<ul style="list-style-type: none"> • Characteristic of different shapes of pens/cages • Different life support system for pens/cages • Characteristics of different types of cages 	<ol style="list-style-type: none"> 1. Different life support system for pens/cages is identified. 2. Signs and symbols of plan are used according to fishpond engineering standards. 3. Lay out of different pens/cages designs are drawn according to established procedures. 	<p>LO3. Draw layout plan for pens and cages.</p>	<ol style="list-style-type: none"> 1. Drawing the layout of fish pen/cage; the size, shape, depth of the pen/cage, life support system and other farm facilities must be stipulated in the design to conform the characteristic of the fish to be cultured. 	<ul style="list-style-type: none"> • Written test • Performance test 	<p>4 hours</p>

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LESSON 4: APPLYING SAFETY MEASURES IN FISHERY FARM OPERATIONS					
<p><i>Demonstrate understanding of/on:</i></p> <ul style="list-style-type: none"> • Farm works that involves using chemicals • Personal protective equipment (PPE) used in farms • Basic first aid • Farm emergency procedures regarding safety working environment 	<ol style="list-style-type: none"> 1. Safety measures are applied based on work requirement and aquaculture procedures. 2. Tools and materials are utilized in accordance with specification and procedures. 3. Outfits are worn in accordance with farm requirements. 4. Shelf life and or expiration of materials are effectively checked against manufacturers' specifications. 5. Hazards in the workplace are identified and reported in line with farm guidelines. 	<p>LO1. Apply appropriate safety measures while working in farm.</p>	<ol style="list-style-type: none"> 1. Demonstrating proper use of Personal Protective Equipment (PPE), chemicals and obnoxious substances. 2. Demonstrating basic first aid application. 3. Making your farm healthier and safer workplace by applying aquaculture emergency procedures. 	<ul style="list-style-type: none"> • Written test • Performance test 	<p>4 hours</p>

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<ul style="list-style-type: none"> • Procedure in cleaning outfits • Technique in storing materials and chemicals • Government requirement regarding farm waste disposal • Waste management system (FPA regulations, DENR laws, etc.) 	<ol style="list-style-type: none"> 1. Used tools and outfit are cleaned, stored in line with farm procedure. 2. Unused materials are labeled and stored according to manufacturers' recommendation and farm requirements. 3. Waste materials are disposed according to manufacturers', government's and farm requirements. 	<p>LO2. Safely keep/dispose tools, materials and outfit.</p>	<ol style="list-style-type: none"> 1. Performing proper cleaning, storing and labeling tools, materials and chemicals. 2. Identifying waste materials in your farm and performing proper disposal according to manufacturer's procedures and government requirement. 	<ul style="list-style-type: none"> • Written examination 	4 hours
					40 hours