

# Curriculum

## Community Agriculture Assistant (CAA)

(Competency Based Curriculum)



**Council for Technical Education and Vocational Training**  
**Curriculum Development Division**  
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## **Introduction**

This curriculum for community agriculture assistant (CAA) is designed to produce lower level technical workforce equipped with knowledge and skills related to agriculture and livestock production and management occupation. It makes the trainees able to get opportunities of earning and learning together in real organizational settings and self-employment in the related occupational field after completion of the training.

As per the curriculum, training duration is divided into three parts. The first part of curriculum consists of 200 hours related technical knowledge and skills to carry out every task in competent manner during On the Job Training (OJT) which is attached in Annex. In the second part, OJT is minimum 800 hours program that aims to provide trainees opportunity for meaningful career related skills by working fulltime in real organizational settings where they can earn and learn together. In the third part, trainees will provide an opportunity to gain skills and knowledge that are not covered during OJT as per curriculum.

## **Aim**

To produce lower level agriculture workers (community agriculture assistant) able to provide agriculture services in the community being an entrepreneur/employee/self employed.

## **Objectives**

After the completion of the training program, the trainees will be able to:

- familiar with agriculture production and management
- familiar with livestock production and management
- manage nursery, fertilizer, and pesticides
- produce vegetable and fruits
- market agricultural products
- communicate with others and
- be familiar with entrepreneur development

## **Course description**

This curriculum provides skills & knowledge necessary for community agriculture assistant. There will be both demonstration by instructors/trainers and opportunity by trainees to perform skills/tasks specified in this curriculum. Trainees will practice & learn skills using typical tools, materials, equipment & machines necessary for the program.

After successful completion of this program the trainees will be equipped with the knowledge and skills related to nursery, fertilizer, and pesticide management; vegetable, fruits production; agriculture product marketing; communication; livestock production, fish farming and entrepreneur development. Some portion of the curriculum is selected to provide training before OJT which is attached in ANNEX. Training institutions can change the theory and practical hours as per requirements of OJT placement.

**Duration**

The total duration of the course at least will be 600 hours in institution and 800 hours OJT (on the job training).

**Target group**

All interested individuals in the field of agriculture with educational prerequisite of class eight pass.

**Group size**

Maximum of forty in a group

**Medium of instruction**

Nepali or English or both

**Pattern of attendance**

- 80% attendance in theory
- 90% in practical/ performance

**Focus of curriculum**

This curriculum emphasizes on competency/performance. 80% time is allocated for performance and only 20% for related technical knowledge. So, the focus will be on performance of the specified competencies in the curriculum.

**Entry criteria**

- Minimum of eight class pass or equivalent
- Minimum of 16 years of age
- Should pass entrance examination

**Follow up suggestions**

In order to assess the success of this program and collect feedbacks/ inputs for the revision of the curriculum a schedule of follow up is suggested as follows:

- First follow up: - Six months after the completion of the program
- Second follow up: - Six months after the completion of the first follow up
- Follow up cycle: - In a cycle of one year after the completion of the second follow up for five years

**Certificate**

The related training institute will provide the certificate of "Community Agriculture Assistant" who successfully completed the course and eligible to attain skill test examination of JTA (plant science) level-2.

### **Students evaluation**

- Continuous evaluation of the trainees' performance is to be done by the related instructor/ trainer to ensure the proficiency over each competency under each of the sub-module.
- Related technical knowledge learnt by trainees will be evaluated through written and oral tests.
- The entrance test will be conducted by the concerned training institute.

### **Trainers qualification**

- B. Sc. Ag or equivalent in related field or
- Diploma in Agriculture with minimum of three years experiences in related field
- Good communicative and instructional skills

### **Trainer-trainees ratio**

- 1:10 for practical classes
- For theory, as per the class room situation

### **Suggestions for instruction**

1. **Select objectives**
  - Write objectives of cognitive domain
  - Write objectives of psychomotor domain
  - Write objectives of affective domain
2. **Select subject matter**
  - Study subject matter in detail
  - Select content related to cognitive domain
  - Select content related to psychomotor domain
  - Select content related to affective domain
3. **Select instructional methods**
  - Teacher centered methods: like lecture, demonstration, questions answer inquiry, induction and deduction methods.
  - Student initiated methods like experimental, field trip/excursion, discovery, exploration, problem solving, and survey methods.
  - Interaction methods like discussion, group/team teaching, microteaching and exhibition.
  - Dramatic methods like role play and dramatization
4. Select Instructional method (s) on the basis of objectives of lesson plans and KAS domains
5. Select appropriate educational materials and apply at right Time and place.
6. Evaluate the trainees applying various tools to correspond the KAS domains
7. Make plans for classroom / field work / workshop organization and management.
8. Coordinate among objectives, subject matter and instructional methods.
9. Prepare lesson plan for Theory and Practical classes.
10. Deliver /conduct instruction / program
11. Evaluate instruction/ program

### **Suggestion for the performance evaluation of the trainees**

1. Perform task analysis
2. Develop a detail task performance checklist
3. Perform continuous evaluation of the trainees by applying the performance checklist.

### **Suggestion for skill training**

Demonstrate performance

1. Demonstrate task performance in normal speed
2. Demonstrate slowly with verbal description of each and every step in the sequence of activity of the task performance using question and answer techniques.
3. Repeat 2 for the clarification on trainees demand if necessary
4. Perform fast demonstration of the task.

Provide trainees the opportunities to practice the task performance demonstration

1. Provide trainees to have guided practice
2. Create environment for practicing the demonstrated task performance
3. Guide the trainees in each and every step of task performance
4. Provide trainees to repeat and repeat as per the need to be proficient on the given task performance
5. Switch to another task demonstration if and only trainees developed proficiency in the task performance.

### **Other suggestions**

1. Apply principles of skill training
2. Allocate 20% Time for Theory classes and 80% Time for task performance while delivering instructions
3. Apply principles of adult learning
4. Apply principles of intrinsic motivation
5. Facilitate maximum trainees involvement in learning and task performance activities
6. Instruct the trainees on the basis of their existing level of knowledge, skills and attitude.

### Course structure

S. N.	Modules/Sub modules	Nature	Total hours		
			Theory	Practical	Total
<b>A. Common Modules</b>					
1	Safety in Agriculture	T/P	9	10	19
2	Basic in Computer	T/P	13	23	36
3	Marketing, communication and entrepreneur development		0	0	0
	3.1: Livestock/ Agricultural product marketing	T/P	6	7	13
	3.2: Communication	T/P	8	8	16
	3.3: Entrepreneur development	T/P	9	14	23
<b>B. Occupational Modules</b>					
4	Fundamental of Agriculture	T/P	46	43	89
5	Horticulture		0	0	0
	5.1 Vegetable production	T/P	23	34	57
	5.2 Fruits production	T/P	10	17	27
	5.3 Seed Production	T/P	14	16	30
6	Livestock Production and Management		0	0	0
	6.1 Introductory livestock and social mobilization	T/P	12	18	30
	6.2 Livestock and it's product management	T/P	37	39	76
	6.3 Livestock health services	T/P	26	16	42
7	Fishery Production and Management	T/P	26	30	56
8	Poultry Production	T/P	31	33	64
9	Organic Agriculture	T/P	9	13	22
	<b>Sub-Total</b>		<b>279</b>	<b>321</b>	<b>600</b>
<b>C.</b>	<b>OJT</b>			<b>800</b>	<b>800</b>
	<b>Total</b>		<b>279</b>	<b>1121</b>	<b>1400</b>

### Module 1: Safety in Agriculture

**Description:** It deals with the knowledge and skills/tasks related safety measures to be kept in mind while performing agricultural activities.

**Objectives:** After its completion the trainees will be able:

- To understand the correct uses of chemicals and appliances.
- To give the first aid to the casualty
- To understand the list of prohibited chemicals and pesticides.
- To know symptoms and there remedies in case of pesticides poisoning.
- To control environment pollution
- To save animals life

**Tasks:** To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

		Th. (9 hrs) + Pr. (10 hrs) = Tot. (19 hrs)		Time (hrs )	
SN	Tasks/skills	Related technical knowledge	Th. (hrs)	Pr. (hrs)	Tot.
1.	Explain objectives and scope of agriculture safety	<ul style="list-style-type: none"> <li>• Objectives</li> <li>• Scopes</li> </ul>	2		2
2.	Deal personal protective equipments	<ul style="list-style-type: none"> <li>• General provision</li> <li>• Helmets and other head protection</li> <li>• Face and eye protection</li> <li>• Upper and lower limb protection</li> <li>• Respiratory protection equipments</li> <li>• Hearing protection</li> <li>• Hygiene facilities and decontamination</li> </ul>	1	2	3
3.	Machinery and work equipment safety	<ul style="list-style-type: none"> <li>• Introduction</li> <li>• Tractors, terrain vehicles, agricultural equipments safe working system and procedure.</li> </ul>	2	3	5
4.	Chemicals	<ul style="list-style-type: none"> <li>• Introduction</li> <li>• Transport, storage and disposal of pesticides.</li> <li>• Exposure during pesticides handling</li> <li>• Medical and health surveillance</li> <li>• Atmosphere and environmental control.</li> </ul>	2	3	5
5.	Animal production	<ul style="list-style-type: none"> <li>• Animal handling</li> <li>• Hazard description</li> <li>• Risk assessment</li> <li>• Elimination of the hazards</li> <li>• Control of the hazard.</li> </ul>	2	2	4
<b>Total:</b>			<b>9</b>	<b>10</b>	<b>19</b>



## Module 2: Basics in Computer

**Description:** It deals with the knowledge and skills/tasks related basic knowledge about operating system, windows setting, and Internet and Microsoft offices.

**Objectives:** After its completion the trainees will be able:

- To understand the introduction and basics of computer.
- To use Internet and its accessories.
- To use Microsoft office programs.

**Tasks:** To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

		Th.(13 hrs) + Pr.(23 hrs) = Tot.( 36 hrs)		Time( hrs )	
SN	Tasks/skills	Related technical knowledge	Th. (hrs)	Pr. (hrs)	Tot.
1	Introduce computer and its basic programming	• Computer system and its terminology	1	1	2
		• Operating system	1	2	3
		• Windows system and its different features	1	2	3
2	Internet	• Internet functioning	1	2	3
		• Web browser	1	2	3
		• Web address	1	1	2
		• Social networks	1	2	3
3	Microsoft offices	• Ms word and its basic	1	2	3
		• Keyboard shortcuts	1	1	2
		• Prepare CV	1	2	3
		• Tables	1	1	2
		• Power point	1	2	3
		• Ms Excel	1	3	4
<b>Total:</b>			<b>13</b>	<b>23</b>	<b>36</b>

<b>Module 3: Marketing, communication and entrepreneur</b>					
<p><b>Description:</b> It deals with the knowledge and skills related to market livestock products, communicate with others, and develop entrepreneurship skills.</p> <p><b>Objectives:</b> After its completion the trainees will be able:</p> <ul style="list-style-type: none"> <li>• To market livestock/ agriculture products</li> <li>• To communicate with others</li> <li>• To develop entrepreneurship skills</li> </ul> <p><b>Sub-modules:</b></p> <ol style="list-style-type: none"> <li>1. Livestock/ agricultural product marketing</li> <li>2. Communication</li> <li>3. Entrepreneur development</li> </ol>					
<b>Sub module 3.1: Livestock/Agriculture product marketing</b>					
<p><b>Description:</b> It deals with the knowledge and skills/tasks related to livestock product marketing. Each task consists of minimum related technical knowledge necessary to carry out that every task in a competent/ professional manner, and time allocation for the task and its related knowledge.</p> <p><b>Objective:</b> After its completion the trainees will be able:</p> <ul style="list-style-type: none"> <li>• To market livestock products</li> </ul> <p><b>Tasks:</b> To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:</p>					
Th.( 6 hrs) + Pr.( 7 hrs) = Tot.( 13 hrs)					
SN	Tasks/skills/competencies	Related technical knowledge	Th (hrs)	Pr (hrs)	Tot (hrs)
1	Store Agriculture/ Livestock products	<ul style="list-style-type: none"> <li>• Introduction to different storing techniques (Thermal storage, curing, canning etc)</li> </ul>	1	1	2
2	Seasonal Agriculture/livestock products	<ul style="list-style-type: none"> <li>• Curing</li> <li>• Freezing</li> <li>• Smoking</li> <li>• Drying etc</li> </ul>	1	1	2
3	Identify market	<ul style="list-style-type: none"> <li>• Survey of livestock/Agriculture products' market</li> </ul>	1	1	2
4	Manage transportation	<ul style="list-style-type: none"> <li>• Different types of transportation system used for livestock/Agriculture products</li> </ul>	1	1	2
5	Promote sales	<ul style="list-style-type: none"> <li>• Advertisement</li> <li>• Emphasis of the scientific technique</li> </ul>	1	1	2
6	Prepare packages	<ul style="list-style-type: none"> <li>• Principles of packaging</li> <li>• Different packaging techniques for different livestock/ Agriculture products</li> </ul>	1	2	3
Total:			<b>6</b>	<b>7</b>	<b>13</b>

<b>Sub module 3.2: Communication</b>					
		<p><b>Description:</b> It deals with the knowledge and skills/tasks related to communication. Each task consists of minimum related technical knowledge necessary to carry out that every task in a competent/ professional manner, and time allocation for the task and its related knowledge.</p> <p><b>Objective:</b> After its completion the trainees will be able:</p> <ul style="list-style-type: none"> <li>To communicate with others</li> </ul> <p><b>Tasks:</b> To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:</p>			
		Th.( 8 hrs) + Pr.( 8 hrs) = Tot.( 16 hrs)			
SN	Tasks/skills/competencies	Related technical knowledge	Th (hrs)	Pr (hrs)	Tot (hrs)
1	Write Job Application	<ul style="list-style-type: none"> <li>Contents and format of application</li> </ul>	1	1	2
2	Prepare Resume	<ul style="list-style-type: none"> <li>Contents and format of resume</li> </ul>	1	1	2
3	Communicate with senior	<ul style="list-style-type: none"> <li>Disciplinary approach</li> <li>Develop skills to communicate with senior</li> </ul>	1	1	2
4	Communicate with junior	<ul style="list-style-type: none"> <li>Disciplinary approach</li> <li>Skills to communicate with junior</li> </ul>	1	1	2
5	Deal with Customers	<ul style="list-style-type: none"> <li>Important points taken into consideration while dealing with customers</li> </ul>	1	1	2
6	Communicate with Other Farm owners	<ul style="list-style-type: none"> <li>Important points taken into consideration while dealing with farmers</li> </ul>	1	1	2
7	Request / Purchase Tool, Supplies, Materials and Equipment	<ul style="list-style-type: none"> <li>Enlisting the materials of purchase</li> <li>Making inquiry with the concerning agent</li> </ul>	1	1	2
8	Fill up Leave Requisition form	<ul style="list-style-type: none"> <li>Format and content of leave requisition form</li> </ul>	1	1	2
		Total:	<b>8</b>	<b>8</b>	<b>16</b>

### Sub module 3.3: Entrepreneur development

**Description:** It deals with the knowledge and skills/tasks related to entrepreneurship skills development. Each task consists of minimum related technical knowledge necessary to carry out that every task in a competent/professional manner, and time allocation for the task and its related knowledge.

**Objective:** After its completion the trainees will be able:

- To develop entrepreneurship skills

**Tasks:** To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

Th.( 9 hrs) + Pr.( 14 hrs) = Tot.( 23 hrs)					
SN	Tasks/skills/competencies	Related technical knowledge	Th (hrs)	Pr (hrs)	Tot (hrs)
1	Develop Entrepreneurial Competencies	<ul style="list-style-type: none"> <li>• Market information, govt. policies, market channel</li> </ul>	1	2	3
2	Select / Identify a Project	<ul style="list-style-type: none"> <li>• Scope, market demand, project formulation, project feasibility</li> </ul>	1	2	3
3	Manage an Enterprise	<ul style="list-style-type: none"> <li>• Office establishment, staff selection, human resource management, market channel</li> </ul>	1	2	3
4	Develop Marketing Skill.	<ul style="list-style-type: none"> <li>• Market strategies, market information, company policies, market channel</li> </ul>	1	2	3
5	Conduct Promotional Activities	<ul style="list-style-type: none"> <li>• Types (training, advertisement, fair)</li> </ul>	1	2	3
6	Prepare a Business Plan / Scheme	<ul style="list-style-type: none"> <li>• Inventory, budget allocation</li> </ul>	3	3	6
7	Develop communication Skills	<ul style="list-style-type: none"> <li>• Type of communication : mass, individual, group and media</li> </ul>	1	1	2
Total:			<b>9</b>	<b>14</b>	<b>23</b>

### Module 4: Fundamental of Agriculture

**Description:** It deals with the knowledge and skills related to physiology of plant, plant protection and quality control, agricultural economics, soil water and system of irrigation, fertilizer application and some of the advanced technologies in agriculture including post harvest technology.

**Objectives:** After its completion the trainees will be able:

- To elucidate physiology of plant
- To manage fertilizer
- To manage pesticide and control quality of commodity
- To be aware about economics involved in Agriculture and
- To aware about some advanced Agriculture technology and post harvest technology.

		Th.(46 hrs) + Pr.( 43 hrs) = Tot.( 89 hrs)		Time( hrs )	
SN	Tasks/skills	Related technical knowledge	Th. (hrs)	Pr. (hrs)	Tot.
1.	Develop concept on plant physiology	• Cell Walls: Structure, Biogenesis and Expansion	1		1
		Water Balance of Plants			
		• Soluble Transport	1		1
		• Photosynthesis	1		1
		• Plant Hormones: Auxin, Gibberellins, Cytokinins, Ethylene, ABA, Strigolactone	2	2	4
2.	Develop concept on Plant protection	• Introduction to plant protection	1		1
		• Identify disease and pests	1	3	4
		• Integrated pest management (Physical, Chemical, Biological, mechanical and cultural methods)	2	2	4
		• Abiotic and biotic factors effects on Plants		2	2
		• Introduction to Entomology	2	2	4
		• Quality Control	2		2
		• Pesticides calculation	2		2
3.	Develop concept on Agricultural Accounting	• Introduction on Accounting	2	2	4
		• Maintain day book			
		• Income and Expenses	1	1	2
		• Profit and Loss Statement	1	1	2
			1	1	2

4.	Develop concept on soil water and irrigation	<ul style="list-style-type: none"> <li>• Basic soil concepts</li> <li>• Soil Health(Salinity, erosion, acidity, compaction, water logging)</li> <li>• Soil water(water retention, moisture content, water flows in soil)</li> <li>• Water percolation and infiltration</li> <li>• Irrigation and types</li> <li>• Drip Irrigation</li> </ul>	1 2  1 1 2 2	2  1  2 2	1 4  2 1 4 4
5.	Develop concept on plant nutrients and fertilizer application	<ul style="list-style-type: none"> <li>• Macro and Micro Nutrients</li> <li>• Function of Nutrients</li> <li>• Nutrients deficiency symptoms in plants</li> <li>• Introduction to fertilizer</li> <li>• Types of fertilizers</li> <li>• Fertilizer calculations</li> <li>• Compost use and production</li> </ul>	1 1 2  1 2  2	1 1 2   2 2	2 2 4  1 4 2 4
6.	Develop concept on Advanced agriculture	<ul style="list-style-type: none"> <li>➤ Green House Technology <ul style="list-style-type: none"> <li>• Be familiar with the basic skills/knowledge of cultivation/production in GHT</li> <li>• Plan for making Green house</li> <li>• Grow seedlings in Green house</li> <li>• Care for seedlings</li> <li>• Manage disease and pests</li> <li>• Transplant seedlings</li> </ul> </li> <li>➤ Integrated farming system <ul style="list-style-type: none"> <li>• Definition</li> <li>• Enterprises taken</li> <li>• Harmony between enterprises</li> </ul> </li> </ul>	3	4	7
7	Develop concept on post harvest technology	<ul style="list-style-type: none"> <li>➤ Hydroponics <ul style="list-style-type: none"> <li>▪ Introduction, Aging, abscission and Senescence</li> <li>▪ Disease attack after Harvest</li> </ul> </li> <li>➤ Storage and Cooling</li> </ul>	2  1	2  1	4  2

		Methods, Softening and temperature ➤ Grading, labeling, Packing, Transportation, Value Chain ➤ Photo periodic plants ➤ Perishable and non-perishable commodity	2	3	5
<b>Total:</b>			<b>46</b>	<b>43</b>	<b>89</b>

## Module 5: Horticulture

**Description:** It deals with the knowledge and skills/tasks related to vegetable and fruit production along with plant propagation techniques. Each task consists of minimum related technical knowledge necessary to carry out that every task in a competent/ professional manner, and time allocation for the task and its related knowledge.

**Objective:** After its completion the trainees will be able:

- To produce seeds
- To grow and manage fruits and vegetables in scientific way

**Sub-modules:**

1. Vegetable production
2. Fruit production
3. Plant propagation

**Tasks:** To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

### Sub-module 5.1: Vegetable Production

**Description:** It deals with the knowledge and skills/tasks related to off season vegetable production. Each task consists of minimum related technical knowledge necessary to carry out that every task in a competent/ professional manner, and time allocation for the task and its related knowledge.

**Objective:** After its completion the trainees will be able:

- To grow off season vegetables

**Tasks:** To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

		Th.(23 hrs) + Pr.( 34 hrs) = Tot.( 67 hrs)		Time( hrs )	
SN	Tasks/skills	Related technical knowledge	Th. (hrs)	Pr. (hrs)	Tot.
1.	Perform off season cultivation/production of capsicum	• Varieties and their identification	1	1	1
		• Soil & climate	1	1	2
		• Crop distance and sowing time	1	2	3
		• Off season cultivation/production technology of capsicum	1	2	3
		• Checklist of procedural steps for its cultivation / production based on the recent technology.	1	1	2
2.	Perform off season cultivation/production of cucumber	• Varieties and their identification	1	1	1
		• Soil & climate	1	1	2
		• Crop distance and sowing time	1	2	3
		• Off season cultivation/production technology of cucumber	1	2	3
		• Checklist of procedural steps for	1	2	3



		its cultivation / production based on the recent technology	1	2	3
		• Precautions & records keeping	1	1	2
3.	Perform off season cultivation/production of tomato	• Varieties and their identification		1	1
		• Soil & climate	1		1
		• Crop distance and sowing time	1	1	2
		• Off season cultivation/production technology of tomato	1	2	3
		• Checklist of procedural steps for its cultivation / production based on the recent technology	1	2	3
		• Precautions & records keeping	1	1	2
4.	Perform off season cultivation/production of carrot	• Varieties and their identification	1		1
		• Soil & climate	1		1
		• Crop distance and sowing time	1	1	2
		• Off season cultivation/production technology of carrot	1	2	3
		• Checklist of procedural steps for its cultivation / production based on the recent technology	1	2	3
		• Precautions & records keeping		2	2
5.	Off Season Technique	• Plastic Tunnel	1	2	3
		• Plastic House	1	2	3
		• Hot Bed	1	2	3
<b>Total:</b>			<b>23</b>	<b>34</b>	<b>57</b>

### Sub Module 5.2: Fruit production

**Description:** It deals with the knowledge and skills/tasks related to fruit crop production. Each task consists of minimum related technical knowledge necessary to carry out that very task in a competent/ professional manner, and time allocation for the task and its related knowledge.

**Objectives:** After its completion the trainees will be able:

- To produce fruit crops

**Tasks:** To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

		Th.( 10 hrs) + Pr.( 17 hrs) = Tot.( 27 hrs)	Time( hrs )		
SN	Tasks/skills	Related technical knowledge	Th. (hrs)	Pr. (hrs)	Tot.
6.	Make plan	<ul style="list-style-type: none"> <li>• Site (topography, soil, aspects, area)</li> </ul>	1	1	2
7.	Perform layout	<ul style="list-style-type: none"> <li>• Measurements, calculation, designing</li> </ul>	1	3	4
8.	Transplant fruit seedlings	<ul style="list-style-type: none"> <li>• Time of plantation, field preparation, fertilizer calculation and manuring, planting distance, irrigation (method and water requirement), pit digging</li> </ul>	2	3	5
9.	Carryout intercultural operation	<ul style="list-style-type: none"> <li>• Weeding, hoeing, earthing up, mulching, irrigation, chemicals (for disease and pest) spraying</li> </ul>	1	3	4
10.	Protect fruit plant	<ul style="list-style-type: none"> <li>• Pest/disease management (symptom identification, pest identification, method of protection(IPM/ IDM, chemicals or organic)</li> </ul>	3	3	6
11.	Carryout training / pruning	<ul style="list-style-type: none"> <li>• Training/pruning: methods and timing</li> </ul>	1	2	3
12.	Harvest fruit	<ul style="list-style-type: none"> <li>• Maturity index, method and time of harvest</li> </ul>	1	2	3
<b>Total:</b>			<b>10</b>	<b>17</b>	<b>27</b>

### Sub-module 5.3: Seed Production

**Description:** It deals with the knowledge and skills/tasks related to seeds production. Each task consists of minimum related technical knowledge necessary to carry out that every task in a competent/ professional manner, and time allocation for the task and its related knowledge.

**Objective** After its completion the trainees will be able:

- To produce seeds

**Tasks:** To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

		Th.(14 hrs) + Pr.( 16 hrs) = Tot.( 30 hrs)	Time( hrs )		
SN	Tasks/skills	Related technical knowledge	Th. (hrs)	Pr. (hrs.)	Tot.
1.	Make plan	<ul style="list-style-type: none"> <li>• Seed type (self or crossed), site (topography, soil, aspects, area)</li> </ul>	1	1	2
2.	Produce / receive seeds	<ul style="list-style-type: none"> <li>• Concept, source, method (if produced), types</li> </ul>	2	2	4
3.	Prepare land	<ul style="list-style-type: none"> <li>• Land preparation (ploughing, leveling, manuring)</li> </ul>	1	2	3
4.	Sow seed / plant	<ul style="list-style-type: none"> <li>• Seed quality (purity, viability), Germination, Dormancy, Seed rate (Calculation), planting distance, isolation distance, method</li> </ul>	3	3	6
5.	Carryout intercultural operation	<ul style="list-style-type: none"> <li>• Weeding, hoeing, irrigation, Staking</li> </ul>	1	1	2
6.	Protect plants (Seed borne, Storage)	<ul style="list-style-type: none"> <li>• Pest/disease management (symptom identification, pest identification, method of protection (IPM/ IDM, Chemicals or organic), Seed treatment.</li> </ul>	2	3	5
7.	Control quality	<ul style="list-style-type: none"> <li>• Rouging, Inspection, moisture content, Bagging, Selfing</li> </ul>	2	2	4
8.	Harvest seeds	<ul style="list-style-type: none"> <li>• Maturity index, time and method, Threshing</li> </ul>	2	2	4
<b>Total:</b>			14	16	30

## Module 6: Livestock Production and Management

**Description:** It deals with the knowledge and skills related to livestock production and their managements.

**Objectives:** After its completion the trainees will be able:

- To understand livestock management
- To understand livestock health services
- To understand product management

**Sub-modules:**

1. Introductory livestock
2. Livestock and its product management
3. Livestock Health services

### Sub-module 6.1: Introductory livestock

**Description:** It deals with the knowledge and skills related to Introductory livestock.

**Objectives:** After its completion the trainees will be able:

1. To introduce livestock occupation

**Tasks:** To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

Th.(12 hrs) + Pr.(18 hrs) = Tot.( 30 hrs)					
Time( hrs )					
SN	Tasks/skills	Related technical knowledge	Th. (hrs)	Pr. (hrs)	Tot. (hrs)
1.	Develop concept of animal husbandry	<ul style="list-style-type: none"> <li>• The importance and scope of livestock production to the farming system in Nepal.</li> <li>• Importance of livestock productivity as source of income and major capital investment of most village farmers</li> <li>• Construct Travis (Crate)</li> </ul>	1		
			2	2	5
2.	Develop concept of livestock management	<ul style="list-style-type: none"> <li>• General requirements for livestock farming e.g. housing, feed, water, health care etc</li> </ul>	3	5	8
3.	Identify common veterinary tools and equipments	<ul style="list-style-type: none"> <li>• Restraining equipments</li> <li>• Surgical equipments</li> <li>• Machinery equipments</li> </ul>	1	2	3
			1	2	3
			1	2	3
4.	Perform First Aid in animals	<ul style="list-style-type: none"> <li>• Animal handling techniques, Bleeding control, wound dressing, dehydration control, fever control, treatment for poisoning, burns and scalds</li> </ul>	3	5	8
<b>Total:</b>			<b>12</b>	<b>18</b>	<b>30</b>

### Sub-module 6.2: Livestock and its product management

**Description:** It deals with the knowledge and skills related to herd/flock management, breeding management, nutrition management and goat / sheep keeping.

**Objectives:** After its completion the trainees will be able:

- To assist for herd/flock management
- To assist for breeding management
- To manage nutrition

**Tasks:** To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

Th.( 37 hrs) + Pr.(39 hrs) = Tot.( 76 hrs)					
			Time( hrs )		
SN	Tasks/skills	Related technical knowledge	Th. (hrs)	Pr. (hrs)	Tot.
1.	Manage housing	<ul style="list-style-type: none"> <li>• Criteria of site selection</li> <li>• Types of housing</li> <li>• Construction of animal shed (Use of locally available materials for the construction)</li> <li>• Construction of individual pen</li> </ul>	1 1 1 1	1 3	1 2 4 2
2.	Care/Manage of newly born	<ul style="list-style-type: none"> <li>• Care of the new born (warm, dry, ensure that it is feeding, colostrums and its importance, dipping of navel to prevent infections), Docking, Disbudding, Identification(Tagging, notching, Branding), Teeth cutting</li> </ul>	3	4	7
3.	Care and Management of Breeding Male	<ul style="list-style-type: none"> <li>• Selection criteria</li> <li>• Housing, Feeding, Exercise</li> </ul>	2	2	4
4.	Care/Manage pregnant/ milch animal	<ul style="list-style-type: none"> <li>• Special requirements for pregnant female animals (feed, water, housing)</li> <li>• Precautions to be taken during parturition, handling of dystocia, retention of placenta, Prolepses</li> <li>• Caring of mothers after parturition</li> <li>• Care for udder to prevent mastitis</li> </ul>	2 2 2 2	2 2	4 4 4 4
5.	Assist to provide AI	<ul style="list-style-type: none"> <li>• Introduction to AI merits and demerits</li> <li>• AI technology</li> </ul>	1 2	2	1 4
6.	Keep breeding record	<ul style="list-style-type: none"> <li>• Contents and preparation breeding record</li> </ul>	1	1	2
7.	Grow improved forage	<ul style="list-style-type: none"> <li>• Introduction, classification and types</li> <li>• Requirements for growing of Napier, Setaria, Rye, Berseem, Oat, White clover, Pasture grasses</li> </ul>	3	3	6

8.	Prepare silage/ hay	• Crops suitable for hay/silage making according to season	1	2	3
		• Process of hay and silage making, characteristics of good hay and silage	2		2
		• Storage of hay, straw stalks and silage and their utilization	2	2	4
9.	Grow fodder tree	• Locally available multipurpose fodder trees and their importance	3		3
		• Procedure of growing	1	2	3
10.	Produce clean milk and Pasteurize milk	• Principle involved in pasteurization,	1	2	3
		• Clean-in-place (CIP) • Methods of pasteurization: local and using special equipment	1	2	3
11.	Make Milk product	• Preparation of Khoa, Ghee, chhurpi, Yoghurt and Panner	2	4	6
Total:			<b>37</b>	<b>39</b>	<b>76</b>

### Sub-module 6.3: Livestock health services

**Description:** : It deals with the knowledge and skills related to preventive services, first aid treatment, zoonotic diseases, and drugs management.

**Objectives:** After its completion the trainees will be able:

- To provide / facilitate preventive services
- To provide first aid treatment
- To assist to manage drugs

**Tasks:** To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

Th.( 26 hrs) + Pr.(16 hrs) = Tot.( 42 hrs)					
			Time( hrs )		
SN	Tasks/skills	Related technical knowledge	Th. (hrs)	Pr. (hrs)	Tot. (hrs)
1.	Quarantine animals	<ul style="list-style-type: none"> <li>• Definition of quarantine</li> <li>• Quarantine procedure</li> </ul>	3		3
2.	Isolate sick animal	<ul style="list-style-type: none"> <li>• Justification of isolation</li> <li>• Isolation procedure</li> </ul>	1	1	2
3.	Vaccinate animals / poultry	<ul style="list-style-type: none"> <li>• Introduction to vaccine</li> <li>• Common vaccines and their inoculation procedure in animals</li> </ul>	1 2	3	1 5
4.	Develop list of diseases	<ul style="list-style-type: none"> <li>• General introduction about diseases</li> <li>• Zoonotic disease</li> <li>• External and internal parasites</li> <li>• Preventive and control measures</li> <li>• Disease cycle</li> <li>• Poisoning</li> </ul>	2 2 3 3 4 1	1 3 3	3 2 6 6 4 2
5.	Manage drugs	<ul style="list-style-type: none"> <li>• Types of drugs</li> <li>• Methods of drug injection</li> </ul>	2 2	2 2	4 4
<b>Total:</b>			<b>26</b>	<b>16</b>	<b>42</b>

## Module 7: Fish production and their management

**Description:** It deals with the knowledge and information about the classification, hatchery management, breeding and different diseases and controls in fish production.

**Objectives:** After its completion the trainees will be able:

1. To explain the breeds of fish available in Nepal.
2. To understand the rearing of spawn.
3. To construct the fish farm.
4. To control different associated weeds and diseases of fish.
5. To calculate nutrition requirement of fish and exotic breeds of fish.

**Task :** To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

Th.( 26 hrs) + Pr.( 30 hrs) = Tot.( 56 hrs)					
			Time( hrs )		
SN	Objectives	Related technical knowledge	Th. (hrs)	Pr. (hrs)	Tot.
1.	Introduce different breeds of fish	• Introduction of different domestic and exotic breeds of fish.	2	2	4
		• Types of fish culture.	2	2	4
2.	Study pond ecology of fish	• Hatchery and their management	2	2	4
		• Design and construction of fresh water fish pond.	2	2	4
		• Carp production in manure ponds	2	2	4
		• Mechanization of fish farm operation.	1	1	2
		• Manage dissolve oxygen	1	1	2
		• Management of fish farm	2	2	4
3.	Breeding and propagation	• Hypophysation	1	1	2
		• Spawn production and rearing	2	2	4
		• Fish breeding	2	2	4
		• Seed production	1	2	3
		• Transport of fish seed	1	1	2
4.	Control of Weeds and disease in fish cultivation	• Aquatic enemies and control	1	2	3
		• Aquatic weeds and their control	1	2	3
		• Fish Disease and their control	2	2	4
5.	Harvest Fish	• Common applied techniques in fish pond	1	2	3
<b>Total:</b>			<b>26</b>	<b>30</b>	<b>56</b>



## Module 8: Poultry production and their management

**Description:** It deals with the knowledge and skills related to housing, bio security, diseases, breeders and different management aspects in case of poultry.

**Objectives:** After its completion the trainees will be able:

- To elucidate overview and introduction about poultry
- To construct proper housing and management for poultry production.
- To control different diseases in poultry.
- To know about different breeds of poultry.
- To understand different management prospects in poultry production.

**Task:** To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

		Th.(31 hrs) + Pr.(33 hrs) = Tot.( 64 hrs)	Time( hrs )		
SN	Tasks/skills	Related technical knowledge	Th. (hrs)	Pr. (hrs)	Tot .
1.	Introduce and classify poultry production	• Overview and general introduction of poultry	2	2	4
		• Classification of poultry	2	2	4
2.	Construct housing for poultry	• Poultry housing and management (site selection, types, area requirement, ventilation, lighting)	3	3	6
		• Environmental control	1	1	2
3.	Control diseases and nutritional requirement in poultry	• Bio security	1	1	2
		• Poultry diseases	3	3	6
		• Immunity and vaccination	3	3	6
		• Hatchery management	2	2	4
		• Avian Influenza	2		2
4.	Develop concept on breeders and by-product management of poultry	• Primary breeder	2	2	4
		• Broiler breeder	2	3	5
		• Egg management	2	2	4
		• Debeaking	1	1	2
		• Culling	1	1	2
		• Nutrition management	2	4	6
		• Litter and waste management.	2	3	5
Total:			<b>31</b>	<b>33</b>	<b>64</b>

### Module 9: Organic Agriculture

**Description:** It deals with the knowledge and skills/tasks related to production system based on organic principles.

**Objective:** After its completion the trainees will be able:

- To produce crops and livestock without application of prohibited chemicals

**Tasks:** To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

		Th.( 9 hrs) + Pr.(13 hrs) = Tot.(22 hrs)	Time( hrs )		
SN	Tasks/skills	Related technical knowledge	Th. (hrs)	Pr. (hrs)	Tot.
6.	Introduce organic agriculture	• General introduction of organic farming	1		1
		• Principles of organic farming	1		1
		• Prohibited materials in organic farming	1	3	4
7.	Disease and pest control approach	• List of diseases and their control.	2	3	5
		• Preparation of organic pesticides and their uses	2	3	5
8.	Standards and certification process used in organic agriculture	• List of standards made globally	1	2	3
		• Process of certification	1	2	3
Total:			<b>9</b>	<b>13</b>	<b>22</b>

## **ANNEX**

### Course structure (For pre OJT)

SN	Modules/Sub modules	Nature	Total hours		
			Theory	Practical	Total
<b>A. Common Modules</b>					
1	Safety in Agriculture	T/P	9	10	19
2	Basic in Computer	T/P	13	23	36
3	Marketing, communication and entrepreneur development				
	3.1: Livestock/Agricultural product marketing	T/P	4	2	6
	3.2: Communication	T/P	6	6	12
<b>B. Occupational Modules</b>					
4	Fundamental of Agriculture	T/P	41		41
5	Horticulture				
	5.4 Vegetable production	T/P	20		20
	5.5 Fruits production	T/P	9		9
	5.6 Seed Production	T/P	7		7
6	Livestock Production and Management				
	6.4 Introductory livestock	T/P	12	6	18
	6.5 Livestock and it's product management	T/P	28		28
	6.6 Livestock health services	T/P	4		4
<b>Total</b>			<b>153</b>	<b>47</b>	<b>200</b>

## Module 1: Safety in agriculture

<b>Module 1: Safety in agriculture</b>					
	<p><b>Description:</b> It deals with the knowledge and skills/tasks related safety measures to be kept in mind while performing agricultural activities.</p> <p><b>Objectives:</b> After its completion the trainees will be able:</p> <ul style="list-style-type: none"> <li>• To understand the correct uses of chemicals and appliances.</li> <li>• To give the first aid to the casualty</li> <li>• To understand the list of prohibited chemicals and pesticides.</li> <li>• To know symptoms and there remedies in case of pesticides poisoning.</li> <li>• To control environment pollution</li> <li>• To save animals life</li> </ul> <p><b>Tasks:</b> To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:</p>				
	Th.(9 hrs) + Pr.( 10 hrs) = Tot.(19 hrs)			Time( hrs )	
SN	Tasks/skills	Related technical knowledge	Th. (hrs)	Pr. (hrs)	Tot.
13.	Explain objectives and scope of agriculture safety	<ul style="list-style-type: none"> <li>• Objectives</li> <li>• Scopes</li> </ul>	1 1		1 1
14.	Deal personal protective equipment	<ul style="list-style-type: none"> <li>• General provision</li> <li>• Helmets and other head protection</li> <li>• Face and eye protection</li> <li>• Upper and lower limb protection</li> <li>• Respiratory protection equipment</li> <li>• Hearing protection</li> <li>• Hygiene facilities and decontamination</li> </ul>	1	2	3
15.	Machinery and work equipment safety	<ul style="list-style-type: none"> <li>• Introduction</li> <li>• Tractors, terrain vehicles, agricultural equipment safe working system and procedure.</li> </ul>	2	3	5
16.	Chemicals	<ul style="list-style-type: none"> <li>• Introduction</li> <li>• Transport, storage and disposal of pesticides.</li> <li>• Exposure during pesticides handling</li> <li>• Medical and health surveillance</li> <li>• Atmosphere and environmental control.</li> </ul>	2	3	5
17.	Animal production	<ul style="list-style-type: none"> <li>• Animal handling</li> <li>• Hazard description</li> <li>• Risk assessment</li> <li>• Elimination of the hazards</li> <li>• Control of the hazard.</li> </ul>	2	2	4
<b>Total:</b>			<b>9</b>	<b>10</b>	<b>19</b>

## Module 2: Basics in computer

<p><b>Description:</b> It deals with the knowledge and skills/tasks related basic knowledge about operating system, windows setting, and internet and Microsoft offices.</p> <p><b>Objectives:</b> After its completion the trainees will be able:</p> <ul style="list-style-type: none"> <li>• To understand the introduction and basics of computer.</li> <li>• To use Internet and its accessories.</li> <li>• To use Microsoft office programs.</li> </ul> <p><b>Tasks:</b> To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:</p>					
Th.(13 hrs) + Pr.( 23 hrs) = Tot.( 36 hrs)			Time( hrs )		
SN	Tasks/skills	Related technical knowledge	Th. (hrs)	Pr. (hrs)	Tot.
1	Introduce computer and its basic programming	<ul style="list-style-type: none"> <li>• Computer system and its terminology</li> <li>• Operating system</li> <li>• Windows system and its different features</li> </ul>	1	1	2
			1	2	3
			1	2	3
2	Internet	<ul style="list-style-type: none"> <li>• Internet functioning</li> <li>• Web browser</li> <li>• Web address</li> <li>• Social networks</li> </ul>	1	2	3
			1	2	3
			1	1	2
3	Microsoft offices	<ul style="list-style-type: none"> <li>• Ms word and its basic</li> <li>• Keyboard shortcuts</li> <li>• Prepare CV</li> <li>• Tables</li> <li>• Power point</li> <li>• Ms Excel</li> </ul>	1	2	3
			1	1	2
			1	2	3
			1	3	4
<b>Total:</b>			<b>13</b>	<b>23</b>	<b>36</b>

### Module 3: Marketing, communication and entrepreneur

**Description:** It deals with the knowledge and skills related to market livestock products, communicate with others, and develop entrepreneurship skills.

**Objectives:** After its completion the trainees will be able:

- To market livestock/ agriculture products
- To communicate with others
- To develop entrepreneurship skills

**Sub-modules:**

4. Livestock/ agriculture product marketing
5. Communication
6. Entrepreneur development

#### Sub module 3.1: Livestock/Agriculture product marketing

**Description:** It deals with the knowledge and skills/tasks related to livestock product marketing. Each task consists of minimum related technical knowledge necessary to carry out that every task in a competent/ professional manner and time allocation for the task and its related knowledge.

**Objective:** After its completion the trainees will be able:

- To market livestock products

**Tasks:** To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

Th.( 4 hrs) + Pr.( 2 hrs) = Tot.(6 hrs)					
SN	Tasks/skills/competencies	Related technical knowledge	Th (hrs)	Pr. (hrs)	Tot (hrs)
1	Store Agriculture/Livestock products	<ul style="list-style-type: none"> <li>• Introduction to different storing techniques (Thermal storage, curing, canning etc)</li> </ul>	1		1
2	Seasonal Agriculture/livestock products	<ul style="list-style-type: none"> <li>• Curing</li> <li>• Freezing</li> <li>• Smoking</li> <li>• Drying etc</li> </ul>	1		1
4	Manage transportation	<ul style="list-style-type: none"> <li>• Different types of transportation system used for livestock/Agriculture products</li> </ul>	1		1
6	Prepare packages	<ul style="list-style-type: none"> <li>• Principles of packaging</li> <li>• Different packaging techniques for different livestock/Agriculture products</li> </ul>	1	2	3
<b>Total:</b>			<b>4</b>	<b>2</b>	<b>6</b>

### Sub module 3.2: Communication

**Description:** It deals with the knowledge and skills/tasks related to communication. Each task consists of minimum related technical knowledge necessary to carry out that every task in a competent/ professional manner and time allocation for the task and its related knowledge.

**Objective:** After its completion the trainees will be able:

- To communicate with others

**Tasks:** To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

Th.( 6 hrs) + Pr.( 6 hrs) = Tot.( 12 hrs)					
SN	Tasks/skills/competencies	Related technical knowledge	Th (hrs)	Pr. (hrs)	Tot (hrs)
3	Communicate with senior	<ul style="list-style-type: none"> <li>• Disciplinary approach</li> <li>• Develop skills to communicate with senior</li> </ul>	1	1	2
4	Communicate with junior	<ul style="list-style-type: none"> <li>• Disciplinary approach</li> <li>• Skills to communicate with junior</li> </ul>	1	1	2
5	Deal with Customers	<ul style="list-style-type: none"> <li>• Important points taken into consideration while dealing with customers</li> </ul>	1	1	2
6	Communicate with Other Farm owners	<ul style="list-style-type: none"> <li>• Important points taken into consideration while dealing with farmers</li> </ul>	1	1	2
7	Request / Purchase Tool, Supplies, Materials and Equipment	<ul style="list-style-type: none"> <li>• Enlisting the materials of purchase</li> <li>• Making inquiry with the concerning agent</li> </ul>	1	1	2
8	Fill up Leave Requisition form	<ul style="list-style-type: none"> <li>• Format and content of leave requisition form</li> </ul>	1	1	2
	Total:		<b>6</b>	<b>6</b>	<b>12</b>



### Module 3.4: Fundamental of Agriculture

**Description:** It deals with the knowledge and skills related to Physiology of plant, plant protection and quality control, Agricultural economics, Soil water and system of irrigation, Fertilizer application and some of the Advanced technologies in Agriculture including Post harvest technology.

**Objectives:** After its completion the trainees will be able:

- To elucidate physiology of plant
- To manage fertilizer
- To manage pesticide and control quality of commodity
- To be aware about economics involved in Agriculture and
- To aware about some advanced Agriculture technology and post harvest technology.

Th.(41 hrs) + Pr.( hrs) = Tot.( 41 hrs)					
			Time( hrs )		
SN	Tasks/skills	Related technical knowledge	Th. (hrs)	Pr. (hrs)	Tot.
2.	Develop concept on plant physiology	<ul style="list-style-type: none"> <li>• Cell Walls: Structure, Biogenesis and Expansion</li> <li>• Water Balance of Plants</li> <li>• Soluble Transport</li> <li>• Photosynthesis</li> <li>• Plant Hormones: Auxin, Gibberellins, Cytokinins, Ethylene, ABA, Strigolactone</li> </ul>	1		1
			1		1
			1		1
			2		2
3.	Develop concept on Plant protection	<ul style="list-style-type: none"> <li>• Introduction to plant protection</li> <li>• Identify disease and pests</li> <li>• Integrated pest management (Physical, Chemical, Biological, mechanical and cultural methods)</li> <li>• Abiotic and biotic factors effects on Plants</li> <li>• Introduction to Entomology</li> <li>• Quality Control</li> <li>• Pesticides calculation</li> </ul>	1		1
			1		1
			2		2
			2		2
			2		2
			2		2
4.	Develop concept on soil water and irrigation	<ul style="list-style-type: none"> <li>• Basic soil concepts</li> <li>• Soil Health(Salinity, erosion, acidity, compaction, water logging)</li> <li>• Soil water(water retention, moisture content, water flows in soil)</li> <li>• Water percolation and infiltration</li> <li>• Irrigation and types</li> <li>• Drip Irrigation</li> </ul>	1		1
			2		2
			1		1
			1		1
			2		2
			2		2

5.	Develop concept on plant nutrients and fertilizer application	<ul style="list-style-type: none"> <li>• Macro and Micro Nutrients</li> <li>• Function of Nutrients</li> <li>• Nutrients deficiency symptoms in plants</li> <li>• Introduction to fertilizer</li> <li>• Types of fertilizers</li> <li>• Fertilizer calculations</li> <li>• Compost use and production</li> </ul>	1 1 2  1 2 2		1 1 2  1 2 2
6.	Develop concept on Advanced agriculture	<ul style="list-style-type: none"> <li>➤ Green House Technology <ul style="list-style-type: none"> <li>• Be familiar with the basic skills/knowledge of cultivation/production in GHT</li> <li>• Plan for making Green house</li> <li>• Grow seedlings in Green house</li> <li>• Care for seedlings</li> <li>• Manage disease and pests</li> <li>• Transplant seedlings</li> </ul> </li> <li>➤ Integrated farming system <ul style="list-style-type: none"> <li>• Definition</li> <li>• Enterprises taken</li> <li>• Harmony between enterprises</li> </ul> </li> <li>➤ Hydroponics <ul style="list-style-type: none"> <li>• Introduction, Aging, abscission and Senescence</li> <li>• Disease attack after Harvest</li> </ul> </li> <li>➤ Storage and Cooling Methods, Softening and temperature</li> <li>➤ Grading, labeling, Packing, Transportation, Value Chain</li> </ul>	3     2   1  2		3     2   1  2
7.	Develop concept on post harvest technology	<ul style="list-style-type: none"> <li>➤ Photo periodic plants</li> <li>➤ Perishable and non-perishable commodity</li> </ul>			
<b>Total:</b>			<b>41</b>		<b>41</b>

## Module 5: Horticulture

**Description:** It deals with the knowledge and skills/tasks related to vegetable and fruit production along with plant propagation techniques. Each task consists of minimum related technical knowledge necessary to carry out that every task in a competent/ professional manner and time allocation for the task and its related knowledge.

**Objective:** After its completion the trainees will be able:

- To produce seeds
- To grow and manage fruits and vegetables in scientific way

**Sub-modules:**

4. Vegetable production
5. Fruit production
6. Plant propagation

**Tasks:** To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

### Sub-module 5.1: Vegetable Production

**Description:** It deals with the knowledge and skills/tasks related to off season vegetable production. Each task consists of minimum related technical knowledge necessary to carry out that every task in a competent/ professional manner and time allocation for the task and its related knowledge.

**Objective:** After its completion the trainees will be able:

- To grow off season vegetables

**Tasks:** To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

Th.(20 hrs) + Pr.( hrs) = Tot.( 20 hrs)					
Time( hrs )					
SN	Tasks/skills	Related technical knowledge	Th. (hrs)	Pr. (hrs)	Tot.
9.	Perform off season cultivation/production of capsicum	• Varieties and their identification	1		1
		• Soil & climate	1		1
		• Crop distance and sowing time	1		1
		• Off season cultivation/production technology of capsicum	1		1
		• Checklist of procedural steps for its cultivation / production based on the recent technology.	1		1
		• Precautions & records keeping			1
10.	Perform off season cultivation/production of cucumber	• Varieties and their identification	1		1
		• Soil & climate	1		1
		• Crop distance and sowing time	1		1
		• Off season cultivation/production	1		1

		technology of cucumber • Checklist of procedural steps for its cultivation / production based on the recent technology • Precautions & records keeping	1		1
11.	Perform off season cultivation/production of tomato	• Varieties and their identification • Soil & climate • Crop distance and sowing time • Off season cultivation/production technology of tomato • Checklist of procedural steps for its cultivation / production based on the recent technology • Precautions & records keeping	1 1 1 1 1		1 1 1 1 1
12.	Perform off season cultivation/production of carrot	• Varieties and their identification • Soil & climate • Crop distance and sowing time • Off season cultivation/production technology of carrot • Checklist of procedural steps for its cultivation / production based on the recent technology • Precautions & records keeping	1 1 1 1 1		1 1 1 1 1
Total:			<b>20</b>		<b>20</b>

## Sub Module 5.2: Fruit production

**Description:** It deals with the knowledge and skills/tasks related to fruit crop production. Each task consists of minimum related technical knowledge necessary to carry out that every task in a competent/ professional manner, and time allocation for the task and its related knowledge.

**Objectives:** After its completion the trainees will be able:

- To produce fruit crops

**Tasks:** To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

		Th.(9 hrs) + Pr.( hrs) = Tot.( 9 hrs)	Time( hrs )		
SN	Tasks/skills	Related technical knowledge	Th. (hrs)	Pr. (hrs)	Tot.
18.	Perform layout	<ul style="list-style-type: none"> <li>• Measurements, calculation, designing</li> </ul>	1		1
19.	Transplant fruit seedlings	<ul style="list-style-type: none"> <li>• Time of plantation, field preparation, fertilizer calculation and manuring, planting distance, irrigation (method and water requirement), pit digging</li> </ul>	2		2
20.	Carryout intercultural operation	<ul style="list-style-type: none"> <li>• Weeding, hoeing, earthing up, mulching, irrigation, chemicals (for disease and pest) spraying</li> </ul>	1		1
21.	Protect fruit plant	<ul style="list-style-type: none"> <li>• Pest/disease management (symptom identification, pest identification, method of protection (IPM/ IDM, chemicals or organic)</li> </ul>	3		3
22.	Carryout training / pruning	<ul style="list-style-type: none"> <li>• Training/pruning: methods and timing</li> </ul>	1		1
23.	Harvest fruit	<ul style="list-style-type: none"> <li>• Maturity index, method and time of harvest</li> </ul>	1		1
<b>Total:</b>			<b>9</b>		<b>9</b>

### Sub-module 5.3: Seed Production

**Description:** It deals with the knowledge and skills/tasks related to seeds production. Each task consists of minimum related technical knowledge necessary to carry out that every task in a competent/ professional manner and time allocation for the task and its related knowledge.

**Objective** After its completion the trainees will be able:

- To produce seeds

**Tasks:** To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

Th.(7 hrs) + Pr.( hrs) = Tot.(7 hrs)					
Time( hrs )					
SN	Tasks/skills	Related technical knowledge	Th. (hrs)	Pr. (hrs)	Tot.
9.	Prepare land	<ul style="list-style-type: none"> <li>• Land Preparation (ploughing, leveling, manuring)</li> </ul>	1		1
10.	Sow seed / plant	<ul style="list-style-type: none"> <li>• Seed quality (purity, viability), Germination, Dormancy, Seed rate (Calculation), planting distance, isolation distance, method</li> </ul>	3		3
11.	Carryout intercultural operation	<ul style="list-style-type: none"> <li>• Weeding, hoeing, irrigation, Staking</li> </ul>	1		1
12.	Harvest seeds	<ul style="list-style-type: none"> <li>• Maturity index, time and method, Threshing</li> </ul>	2		2
<b>Total:</b>			<b>7</b>		<b>7</b>

## Module 6: Livestock Production and Management

**Description:** It deals with the knowledge and skills related to livestock production and their managements.

**Objectives:** After its completion the trainees will be able:

- To understand livestock management
- To understand livestock health services
- To understand product management

**Sub-modules:**

4. Introductory livestock
5. Livestock and its product management
6. Livestock Health services

### Sub-module 6.1: Introductory livestock

**Description:** It deals with the knowledge and skills related to Introductory livestock.

**Objectives:** After its completion the trainees will be able:

2. To introduce livestock occupation

**Tasks:** To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

		Th.(12 hrs) + Pr.(6 hrs) = Tot.( 18 hrs)	Time( hrs )		
SN	Tasks/skills	Related technical knowledge	Th. (hrs)	Pr. (hrs)	Tot.
5.	Develop concept of animal husbandry	<ul style="list-style-type: none"> <li>• The importance and scope of livestock production to the farming system in Nepal.</li> <li>• Importance of livestock productivity as source of income and major capital investment of most village farmers</li> <li>• Construct Travis(Crate)</li> </ul>	1		
			2		3
6.	Develop concept of livestock management	<ul style="list-style-type: none"> <li>• General requirements for livestock farming e.g. housing, feed, water, health care etc</li> </ul>	3		3
7.	Identify common veterinary tools and equipments	<ul style="list-style-type: none"> <li>• Restraining equipments</li> <li>• Surgical equipments</li> <li>• Machinery equipments</li> </ul>	1	2	3
			1	2	3
			1	2	3
8.	Perform First Aid in animals	<ul style="list-style-type: none"> <li>• Animal handling techniques, Bleeding control, wound dressing, dehydration control, fever control, treatment for poisoning, burns and scalds</li> </ul>	3		3
<b>Total:</b>			<b>12</b>	<b>6</b>	<b>18</b>

## Sub-module 6.2: Livestock and its product management

<p><b>Description:</b> It deals with the knowledge and skills related to herd/flock management, breeding management, nutrition management and goat / sheep keeping.</p> <p><b>Objectives:</b> After its completion the trainees will be able:</p> <ul style="list-style-type: none"> <li>▪ To assist for herd/flock management</li> <li>▪ To assist for breeding management</li> <li>▪ To manage nutrition</li> </ul> <p><b>Tasks:</b> To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:</p>					
Th.(28 hrs) + Pr.( hrs) = Tot.( 28 hrs)					
Time( hrs )					
SN	Tasks/skills	Related technical knowledge	Th. (hrs)	Pr. (hrs)	Tot.
12.	Care/Manage of newly born	<ul style="list-style-type: none"> <li>• Care of the new born (warm, dry, ensure that it is feeding, colostrums and its importance, dipping of navel to prevent infections), Docking, Disbudding, Identification(Tagging, notching, Branding), Teeth cutting</li> </ul>	3		3
13.	Care and Management of Breeding Male	<ul style="list-style-type: none"> <li>• Selection criteria</li> <li>• Housing, Feeding, Exercise</li> </ul>	2		2
14.	Care/Manage pregnant/ milch animal	<ul style="list-style-type: none"> <li>• Special requirements for pregnant female animals (feed, water, housing)</li> </ul>	2		2
		<ul style="list-style-type: none"> <li>• Precautions to be taken during parturition, handling of dystocia, retention of placenta, Prolepses</li> </ul>	2		2
		<ul style="list-style-type: none"> <li>• Caring of mothers after parturition</li> </ul>	2		2
		<ul style="list-style-type: none"> <li>• Care for udder to prevent mastitis</li> </ul>	2		2
15.	Assist to provide AI	<ul style="list-style-type: none"> <li>• Introduction to AI merits and demerits</li> </ul>	1		1
		<ul style="list-style-type: none"> <li>• AI technology</li> </ul>	2		2
16.	Grow improved forage	<ul style="list-style-type: none"> <li>• Introduction, classification and types</li> <li>• Requirements for growing of Napier, Setaria, Rye, Berseem, Oat, White clover, Pasture grasses</li> </ul>	3		3
17.	Prepare silage/ hay	<ul style="list-style-type: none"> <li>• Crops suitable for hay/silage making according to season</li> </ul>	1		1
		<ul style="list-style-type: none"> <li>• Process of hay and silage making, characteristics of good hay and silage</li> </ul>	2		2
		<ul style="list-style-type: none"> <li>• Storage of hay, straw stalks and silage and their utilization</li> </ul>	2		2
18.	Produce clean milk and Pasteurize milk	<ul style="list-style-type: none"> <li>• Principle involved in pasteurization,</li> <li>• Clean-in-place (CIP)</li> </ul>	1		1
		<ul style="list-style-type: none"> <li>• Methods of pasteurization: local and using special equipment</li> </ul>	1		1



19.	Make Milk product	<ul style="list-style-type: none"> <li>Preparation of Khoa, Ghee, chhurpi, Yoghurt and Panner</li> </ul>	2		2
Total:			<b>28</b>		<b>28</b>

### Sub-module 6.3: Livestock health services

**Description:** : It deals with the knowledge and skills related to preventive services, first aid treatment, zoonotic diseases, and drugs management.

**Objectives:** After its completion the trainees will be able:

- To provide / facilitate preventive services
- To provide first aid treatment
- To assist to manage drugs

**Tasks:** To fulfill the objective the trainees are expected to get proficiency on the following tasks together with their related technical knowledge:

Th.(4 hrs) + Pr.( hrs) = Tot.( 4 hrs)					
Time( hrs )					
SN	Tasks/skills	Related technical knowledge	Th. (hrs)	Pr. (hrs)	Tot.
6.	Isolate sick animal	<ul style="list-style-type: none"> <li>• Justification of isolation</li> <li>• Isolation procedure</li> </ul>	1		1
7.	Vaccinate animals / poultry	<ul style="list-style-type: none"> <li>• Introduction to vaccine</li> </ul>	1		1
		<ul style="list-style-type: none"> <li>• Common vaccines and their inoculation procedure in animals</li> </ul>	2		2
Total:			<b>4</b>		<b>4</b>