

# **SKILL FACULTY OF AGRICULTURE**

M. Voc. (Agriculture)

2 Year Course

**2023-24**



**SHRI VISHWAKRMA SKILL**

**UNIVERSITY**

**DUDHOLA, PALWAL**

## **Program Learning Outcome**

PO.1: To identify and overcome the problems encountered in day-to-day life in agriculture and social sector.

PO.2: To provide the sound knowledge of agricultural practices and Medicinal plant production.

PO.3: To understand the techniques of seed science and vegetable production.

PO.4: To acquire knowledge on concepts of organic agriculture and understand the procedure of organic certification.

PO.5: To provide hand hold exposure on agriculture statistics and community services

PO.6: To provide hand hold exposure on agriculture -allied sectors like Dairy, Apiculture, Aquaculture, etc.

PO.7: To understand and analyze the current events and issues that are occurring in agriculture and how they affect futuristic agriculture.

**M. Voc. Agriculture - Semester I**

Category	Subject Code	Subjects	Credits			Hours			Theory (Marks)			Practical (Marks)			Total
			Th	P	To	Th	P	To	I	E	To	I	E	To	
General Education Component	AGM-21101	Fundamentals of Agriculture Farming	3	2	5	45	60	105	30	70	100	35	15	50	150
	AGM-21102	Basics of Nursery Raising	3	1	4	45	30	75	30	70	100	35	15	50	150
	AGM-21103	Computer Application in Business	3	1	4	45	30	75	30	70	100	35	15	50	150
			<b>9</b>	<b>4</b>	<b>13</b>	<b>135</b>	<b>120</b>	<b>255</b>	<b>90</b>	<b>210</b>	<b>300</b>	<b>105</b>	<b>45</b>	<b>150</b>	<b>450</b>
Skill Education Component	AGM-21104	Greenhouse System – 1	3	3	6	45	90	135	30	70	100	35	15	50	150
	AGM-21105	Greenhouse System – 2	3	3	6	45	90	135	30	70	100	35	15	50	150
	AGM-21106	Medicinal Plants Growing	4	3	7	60	90	150	30	70	100	35	15	50	150
			<b>10</b>	<b>9</b>	<b>19</b>	<b>150</b>	<b>270</b>	<b>420</b>	<b>90</b>	<b>210</b>	<b>300</b>	<b>105</b>	<b>45</b>	<b>150</b>	<b>450</b>
		<b>Total</b>	<b>19</b>	<b>13</b>	<b>32</b>	<b>285</b>	<b>390</b>	<b>675</b>	<b>180</b>	<b>420</b>	<b>600</b>	<b>210</b>	<b>90</b>	<b>300</b>	<b>900</b>

**M. Voc. Agriculture - Semester II**

Category	Subject Code	Subjects	Credits			Hours			Theory (Marks)			Practical (Marks)			Total
			Th	P	To	Th	P	To	I	E	To	I	E	To	
General Education Component	AGM-21201	MOOC /Online Resources -I	3	0	3	45	0	0	30	70	100	0	0	0	100
	AGM-21202	MOOC / Online Resources - II	2	0	2	30	0	0	30	70	100	0	0	0	100
			<b>5</b>	<b>0</b>	<b>5</b>	<b>75</b>	<b>0</b>	<b>0</b>	<b>60</b>	<b>140</b>	<b>200</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>200</b>
Skill Education Component	AGM-21203	<u><b>OJT</b></u> Greenhouse System (130 hrs) Medicinal Plants Growing (130 hrs) Agriculture Practices (430 hrs)	0	23	23	0	690	690	0	0	0	350	150	500	500
			<b>0</b>	<b>23</b>	<b>23</b>	<b>0</b>	<b>690</b>	<b>690</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>350</b>	<b>150</b>	<b>500</b>	<b>500</b>
		<b>Total</b>	<b>5</b>	<b>23</b>	<b>28</b>	<b>75</b>	<b>690</b>	<b>690</b>	<b>60</b>	<b>140</b>	<b>200</b>	<b>350</b>	<b>150</b>	<b>500</b>	<b>700</b>



## **Complete Syllabus**

### **SEMESTER I**

**Subject: Fundamentals of Agriculture Farming**

**Subject Code: AGM-21101**

**Course Credit: 05 (3-2-0)**

**Max. Marks: 100 (30I+70E); 50 (35I+15E)**

**Course Objectives:** To acquaint students about understand to basic information about the diversified and sustainable agriculture system. The course will help in developing the sustainable agriculture system by hands on experience.

#### **Learning Outcome:**

LO1: Students will know different cropping and farming system like Integrated Farming System.

LO2: To get knowledge on sustainable agricultural practices such as organic farming.

LO3: Learn different techniques of soil and pest management

LO4: Understand the use of nanotechnology in agriculture.

#### **Theory:**

##### **UNIT I**

Farming System-scope, importance, and concept, Types and systems of farming system and factors affecting types of farming, Farming system components, interactions and their maintenance. Cropping system and pattern, multiple cropping system, Efficient cropping system and their evaluation, allied enterprises and their importance, Tools for determining production and efficiencies in cropping and farming system

##### **UNIT II**

Sustainable Agriculture and Environment - Introduction and basic concepts of Environment Factors affecting ecological balance, Deforestation, Overgrazing of range lands, Over exploitation of ground water, Soil, water and air pollution. Sustainable Development Goals & Agricultural Sustainability, Introduction to Sustainable Development Goals, Agricultural Sustainability Index

##### **UNIT III**

Sustainable Agriculture – Introduction to sustainability Definition, scope and advantage of sustainable agriculture, Modern and conventional agriculture in relation to sustainable agriculture, Advantages of Sustainable Agriculture, Economics of Sustainable Agriculture.

##### **UNIT IV**

Impact of improved crop production Technology-Reduction in biodiversity, Build-up of pests, diseases and weeds, Hazards of indiscriminate use of agro- chemicals, Accelerated soil erosion, Irrigation related problems, Depletion of soil Fertility-Soil Sickness Integrated Nutrient and Pest Management, Case Studies - IPM Success Stories by ICAR.

## **UNIT-V**

Agro-Nanotechnology: definition, concepts and techniques, nano-pesticides, nano-fertilizers, nano-sensors, Use of nanotechnology in seed, water, fertilizer, plant protection for scaling-up farm productivity.

### **Practicals:**

- Practical Methods of diagnosis and detection of various insect pests, and plant diseases,
- Methods of insect pests and plant disease measurement,
- Assessment of crop yield losses, calculations based on economics of IPM,
- Identification of biocontrol agents, different predators and natural enemies.
- Mass multiplication of Trichoderma, Pseudomonas, Trichogrammatid, NPV etc.
- Identification and nature of damage of important insect pests and diseases and their management.
- Crop (agro-ecosystem) dynamics of a selected insect pest and diseases.
- Plan & assess preventive strategies (IPM module) and decision making,
- Crop monitoring attacked by insect, pest and diseases.
- Awareness campaign at farmers' fields.

### **Suggested Books:**

1. Katyayan, Arun. 2023. Fundamentals of agriculture Vol. 1 & II, 10th edition. Kaushal Publication.
2. Reddy, G. H. Shankara and Reddy, T. Yallamanda. 2023. Principles of Agronomy 6<sup>th</sup> edition. Kalyanai Publication.
3. Choudhary, S. 2011. Applied Nanotechnology in Agriculture. Arise Publishers & Distributors
4. Meena R., 2019. Sustainable agriculture. Scientific publishers.
5. Chattopadhyay, S.B. 1980. Principles and procedures of plant protection. Oxford & IBH Publishing Company.

**Subject: Basics of Nursery Raising (AGR/Q6103 V1.0)**

**Subject Code: AGM-21102**

**Course Credit: 04 (3-1-0)**

**Max. Marks: 100 (30I+70E); 50(35I+15E)**

**Course Objectives:** To know about nursery, nursery types, site selection, importance of nursery, preparation of nursery bed, plant propagation and pest management.

**Learning outcomes:**

LO1: Enable to identify & select proper nursery site and quality planting materials.

LO2: Identify, select & use the specified tools and equipment relevant to nursery.

LO3: To get knowledge about plant propagation techniques in nursery.

LO4: Understand GAP, irrigation, pest management and nutrient management.

**UNIT-I**

Introduction: scope & importance of nursery and their management, the usage & market demand for Nursery raising, importance of conserving threatened species.

**UNIT-II**

Construction of nursery using approved procedures (AGR/N0901)

Identification & selection of appropriate site for nursery establishment, different types of nursery, soil quality, construction of nursery as per operational requirements, tools & equipment used in nursery and their usage, occupational health & safety requirement

**UNIT-III**

Nursery beds and procure quality seeds/planting materials (AGR/N6113)

Nursery bed as per the agro climatic requirements and habitat of the plant species-raised bed, sunken bed, level beds, germination bed, transplant bed, storage bed, seedling bed and cutting bed, etc. Quality seeds & planting propagules, stem/root cuttings for plant propagation.

**UNIT-IV**

Sowing of seeds and plant seedlings/ propagules in forest nursery (AGR/N6114)

Scientific & Good Agricultural Practices (GAP), plant propagation methods for different plant species, seed treatment as required using approved method, potting & repotting, procedures for seed sowing, managing seedlings- irrigation, nutrient management, weed, pest & disease management, pruning etc., plant hardening process using appropriate techniques, propagation failures & causes, preventive & control measures.

**UNIT-V**

Disease control, irrigation and nutrients management in a nursery (AGR/N6115)



Techniques to inspect quality of soil composition and ensure sterilization of nursery bed & soil mixture, stress conditions, disease symptoms and causes. Control diseases and exercise preventive care, Irrigate and manage nutrient requirements, rain water harvesting structures such as shallow trenches, divisions of ground, etc., safe handling practices while transporting nursery plants.

### **Tools/Equipment required**

Laptop, white board, marker, projector, audio-visual aids, fishing wire, point marking sticks, marking powder or whitewash powder, hoe, spade, land survey machine, GPS handheld survey device, ruler, compass, clinometer, vernier calliper, green house structure, plastic film, shed net, insect net, cooling pad, drip line with sprinkler, welding machine, drill machine, spanner, ratchet, wire rope puller, spirit level tool etc.

### **Practicals:**

Practicals to be conducted on the basis of the whole syllabus.

### **Reference books:**

1. Dwivedi D. and Bharti N. 2019. A handbook for skill development Nursery Management of Horticultural Crops. Satish Serial Publishing House.
2. Krishan R., Kalia R., Tewari J. C. and Roy M. M. 2014. Plant nursey management: Principles and Practices. ICAR, Jodhpur.
3. Dharamsena, P.B. 2016. Nursery Management: Handbook for Beginners.

**Subject: Computer Application in Business**

**Subject Code: AGM-21103**

**Course Credit: 04 (3-1-0)**

**Max. Marks: 100 (30I+70E); 50(35I+15E)**

**Course Objectives:** The syllabus introduces students to basic information and communication technology and proper paradigms that need to be implemented to develop any kind of computer applications. The course will help in developing the basic technical skills by hands on experience.

**Learning Outcome:**

LO1: Understanding the basic application of Computers.

LO2: Understand an operating system and its working and solve common problems related to operating systems.

LO3: Learn basic word processing, Spreadsheet and Presentation Graphics Software skills.

LO4: Study to use the Internet safely, legally, and responsibly.

**Theory**

**UNIT-I**

Introduction to Computer System: Basic Applications of Computer; Computer Memory, Concepts of Hardware and Software, Data and Information; Applications of IECT; Computer Virus: Definition, Types of viruses, Characteristics of viruses, Anti-virus software, Introduction to number system.

**UNIT-II**

Operating System: Overview of operating system: Definition, Functions of operating system, Need and its services, Types of operating system, Batch Processing, Spooling, Multiprocessing, Multiprogramming, Time-Sharing, On-Line Processing, Real-Time Processing, Basics of window operating system, Switching between.

**UNIT-III**

Understanding Office Applications: Introduction to MS Word, Introduction to MS Excel and its applications, Introduction to MS PowerPoint, Menus, Shortcuts, Document types, formatting documents, spread sheet and presentations, Working with Spreadsheets, Different templates, Macros, Mail merge.

**UNIT-IV**

Networking: Network Technologies, Introduction to Internet and protocols: TCP/ IP, Network connecting devices, Topologies, HTTP, HTTPS DNS, Hub, Switches, Router, Repeater, Firewalls, Digital Signature.

**UNIT-V**

Introduction to World Wide Web: WWW and Web Browsers Introduction, Objectives, Concept of internet, Overview of search engines, Popular search engines in use, Surfing the web and websites, hosting your websites, Planning and Developing the websites, Internet service provider.

**Practicals:**

Study of Computer Components, accessories, practice of important DOS Commands. Introduction of different operating systems such as windows, Unix/ Linux, Creating, Files & Folders, File Management. Use of MS-WORD and MS Power-point for creating, editing and presenting a scientific Document. MS-EXCEL - Creating a spreadsheet, use of statistical tools, writing expressions, creating graphs, analysis of scientific data, handling macros. MS- ACCESS: Creating Database, preparing queries and reports, demonstration of Agri-information system. Introduction to World Wide Web (WWW) and its components.

**Recommended Books**

1. Arora, S. L. 2019. Computer Application in Business. Sahitya Bhawan Publications.
2. Shruthi Mathur and Pooja Jain. 2016. Computer Application in Business. Calcotia publishing company.
3. Walkenbach, John; Tyson, Herb; Groh, Michael R. and Wempen, Faithe. 2010. Microsoft Office 2010. John Wiley & Sons.
4. Conner, Nancy and MacDonald, Matthew. 2010. Office 2010: The Missing Manual. O'Reilly Media.
5. Mehta, Versa and Kumar, N. 2003. Computer Application in Business Management. Anmol Publications Pvt Ltd.

**Subject: Greenhouse System-1**

**Subject Code: AGM-21104**

**Course Credit: 06 (3-3-0)**

**Max. Marks: 100 (30I+70E); 50 (35I+15E)**

**Course Objectives:** To acquaint students about to understand importance of green house in India. Designing of different types of green house, maintenance of green houses.

**Learning Outcome:**

LO1: Learn the scope and importance of greenhouse management.

LO2: Identify and explain different greenhouse structures and their functions.

LO3: Enable to maintain the greenhouse.

LO4: Understand the safety measures at workplace.

**Theory:**

**UNIT-I**

Introduction: The scope and importance of greenhouse in India, Different crops that can be grown in greenhouse, Understand the role of a greenhouse fitter.

**UNIT-II**

Design and layout of green house (AGR/N1001)

Types of Greenhouse, various greenhouse components and their function, designing greenhouse, land survey, leveling and measuring angles, structural strength, materials, Structural drawing/layout plan for intallation of structures of green house.

**UNIT-III**

Maintenance of green house (AGR/N1003):

Maintain erected structure, Maintain operational elements of green house for periodic checking

**UNIT-IV**

Maintain Health and safety (AGR/N9903)

Maintain a clean and efficient workplace, appropriate emergency procedures , general safety and first aid.

**Tools/Equipmentrequired**

Laptop, white board, marker, projector, audio-visual aids, fishing wire, point marking sticks, marking powder or whitewash powder, hoe, spade, land survey machine, GPS handheld survey device, ruler, compass, clinometer, vernier calliper, green house structure, plastic film, shed net, insect net, cooling pad, drip line with

sprinkler, welding machine, drill machine, spanner, ratchet, wire rope puller, spirit level tool etc.

**Practicals:** Practicals to be conducted on the basis of the whole syllabus

**Suggested Books:**

1. Ponce, P.; Molina, A.; Cepeda, P. and Lugo, E. 2015. Greenhouse Design and control. CRC Press.
2. Patil N.N. 2016. Green House Technology- Management, Operations and Maintenance.
3. Ghosh A. 2018. Green House technology. Nipa publishers.
4. Boudoin W., Womdim R. *et al.* 2013. Good Agricultural Practices for greenhouse vegetable crops. FAO

**Subject: Greenhouse Sytem-2**

**Subject Code: AGM-21105**

**Course Credit: 06 (3-3-0)**

**Max. Marks: 100 (30I+70E); 50 (15I+35E);**

**Course Objectives:** To acquaint students about to understand importance of green house, installation, structure and designing of different types of green house, irrigation, nutrient and disease management in green houses.

**Learning Outcome:**

LO1: Learn how to develop a greenhouse.

LO2: Enable to know crop cultivation procedure in greenhouse.

LO3: Understand the post harvest techniques of greenhouse crops.

LO4: Able to manage nutrients and pest in protected cultivation.

**Theory**

**UNIT-I**

Installation of greenhouse structure (AGR/N1002)

Erection of greenhouse structure covering with nets and sheets, leakages through gutters, Light and temperature control mechanism, Methods of irrigation, Components of irrigation systems. Basics of crop cultivation: Land preparation, nursery raising, package of practice of crops, harvest and post-harvest management.

**UNIT-II**

Manage greenhouse operations (AGR/N1008)

Crop growth requirements, different growing media for plants, planting, weeding etc, irrigation/ fertigation, various control measures for insects, rodents, pest, diseases & nutritional deficiencies prevention, Harvest/ grade the crop.

**Tools/Equipmentsrequired**

Greenhouse column, C profiles, green house shade nets, thermal nets, square hollow section pipes, green house gutter, pipe connectors, nylon rope, chain pulley, scissors, clamps, sealing material like silicon, hammer, ratchet, and wire puller.

**Practical:** Practicals to be conducted on the basis of the whole syllabus.

**Suggested Books:**

1. Michel, A. M. and Ojha, T.P. 2021. Principles of Agricultural Engineering Vol. I. 14<sup>th</sup> edition. Science technology-Jain Brothers, New Delhi
2. Goldammer T., 2019. Green Management : A Guide to Operations and Technology. Apex publisher.
3. Nikolaou, G.; Neocleous, D.; Katsoulas, N. and Kittas, C. (2019). Irrigation of greenhouse crops. *Horticulturae*, 5(1).
4. Nelson P., 2011, Green house operation and management. 7<sup>th</sup> Edition. Pearson..

**Subject: Medicinal Plants Growing (AGR/Q0901, v1.0)**

**Subject Code: AGM-21106**

**Course Credit: 07(4-3-0)**

**Max. Marks: 100 (30I+70E); 50 (15I+35E);**

**Course Objectives:** After completing this programme, students will be able to identify & select proper nursery site and quality planting materials for medicinal plants cultivation.

**Learning Outcome:**

LO1: To know about the good agricultural practices and propagation of medicinal plants in nursery.

LO2: Enable to perform post-harvest techniques in medicinal plants.

LO3: Understand the marketing procedure of medicinal crops.

LO4: Enable to maintain the safety measures in workplace.

**Theory**

**UNIT-I**

Nursery bed and carry out propagation using good agricultural practices (GAP) (AGR/N0902)  
Nursery bed as per the agro climatic requirements and habitat of the plant species – raised bed, sunken bed, level beds, germination bed, transplant bed, storage bed, seedling bed and cutting bed, etc., quality seeds / planting materials, plant propagation as per the type of species selected using approved techniques: cutting, grafting, budding, layering, planting of modified organs like tuber, rhizome, sucker etc. Raise and manage seedlings in nursery: sowing, planting, watering, weeding, transplanting, prophylactory sprays. Seedlings & replenishment of mortality population. Transplant seedlings to cultivation area using approved procedures. Manage cultivation: nutrient & irrigation management, pest & disease management, inter- cultivation operations

**UNIT-II**

Harvest and post-harvest procedures of medicinal plants (AGR/N0903)

Plants harvesting based on the type of the medicinal plants such as leaves, stems, roots, whole plants, etc., harvesting practices such as selecting appropriate season and time for harvesting; maturity of plant; etc. Cleaning methods to separate soil particles based on the type of species e.g. washing, cutting, peeling, squeezing, brushing, etc. Dehydrate water content from plant matter using approved procedures e.g. shade drying in open areas, drying on perforated surface etc. Sort and grade the harvests as per required quality specifications: colour, purity, maturity, diameter of roots, size or weight of the fruit, etc. safe handling

### **UNIT-III**

Basic marketing related activities for medicinal plants (AGR/N0904)

Demand & supply of medicinal plant products in the market, subsidies/loan available through govt. institutions, loan from the financial institutions, marketing channels, formulate competitive pricing mechanism, B:C ratio, regulations in marketing & sale of the produce.

### **UNIT-IV**

Maintain Health & Safety at the workplace (AGR/N9903)

Risks to health & safety and measures to be taken to be control them. General safety and first aid administration, emergency procedures.

#### **Tools/Equipment required**

Laptop, white board, marker, projector, audio-visual aids, fishing wire, point marking sticks, marking powder or whitewash powder, hoe, spade, land survey machine, GPS handheld survey device, ruler, compass, clinometer, vernier calliper, green house structure, plastic film, shed net, insect net, cooling pad, drip line with sprinkler, welding machine, drill machine, spanner, ratchet, wire rope puller, sprit level tool etc.

**Practical:** Practicals to be conducted on the basis of the whole syllabus

#### **Suggested Books:**

1. Mathe, A. 2015. Medicinal and aromatic Plants of the World Scientific, Production, Commercial and Utilization Aspects. Springer Publisher.
2. Ahmmed, Abu and Rahman, S.K. , 2018, Nursery field and post -harvest Diseases of Medicinal Plant.
3. Purohit, S.S. and Vyas, S.P. 2004. Medicinal Plant Cultivation : A Scientific Approach. Agrobios.
4. Farooqi, A.A. and Sreeramu, B.S. 2004. Cultivation of Medicinal and Aromatic Crops. Universities Press.