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Course title: Gardening and Landscaping

Learning Objectives:

Upon completion of this course, students should be able to:

1. Analyze how meteorological instruments and plant morphology influence gardening and landscaping practices.
2. Evaluate the importance of weather and climate elements in agricultural activities.
3. Demonstrate understanding of agro-climatic regions, their characteristics, and the influence on crop seasons.
4. Identify and explain special weather phenomena and hazard events and their implications for gardening and landscaping.
5. Recognize the importance of weather forecasting and its practical applications in horticulture.
6. Describe the morphology, physiology, and foundational knowledge of horticultural plants.
7. Evaluate soil properties, interpret soil test reports, and classify soils based on texture and agro-climatic zones.
8. Discuss soil correction techniques for acid, alkaline, and saline soils.
9. Explain the role of soil organic matter in influencing soil properties and fertility.
10. Apply horticultural principles in nursery and seed production, including soil, media, fertilizers, and environmental factors.

Learning outcomes:

Upon completion of this course, students will be able to:

1. Evaluate the impact of meteorological instruments and plant morphology on gardening and landscaping.
2. Demonstrate understanding of agro-climatic regions and their influence on crop seasons.
3. Identify and explain special weather phenomena and hazard events affecting gardening and landscaping.
4. Apply principles of weather forecasting in horticulture practices.
5. Describe the morphology, physiology, and foundational knowledge of horticultural plants.
6. Evaluate soil properties and interpret soil test reports.
7. Classify soils based on texture and agro-climatic zones.
8. Discuss acid, alkaline, and saline soil characteristics, and implement correction techniques.
9. Explain the role of soil organic matter in influencing soil properties and fertility.
10. Apply integrated nutrient management principles to maintain soil fertility.

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Unit 1: Foundations of Gardening

Significance of Weather and Climate Elements in Agriculture: Impact of rainfall, temperature, humidity, sunshine, wind speed, and direction. Agro-climatic Regions and their Distinct Characteristics. Weather Patterns in Crop Seasons (Winter, Summer, Monsoon). Significance of Weather Forecasting. Morphology, Physiology, and foundational knowledge of horticultural plants.

Soil and Growth Medium, Fertilizers and Bio-fertilizers, Irrigation Techniques. Cultivation Techniques: Protected Cultivation, Garden Implements. Plant Health and Maintenance: Disease and Pest Control, Disease Control in gardening, Recognition of Ailments and Pesticide Application.

Methods of Propagation: Time and Techniques of Propagation. Specialized Cultivation: Nursery and Seed Production, Bulb and Corm Production, Pot Plants and Lawn Grasses, Ornamental Plants, Landscape Plants and Bonsai. Flower Crop Cultivation: Strategies for Flower Induction. Use of Growth Regulators: Cultivation in Protected Environments (Poly and Net Houses), Specific Crop Focus: Chrysanthemum, Carnation, Rose, Orchids.

Unit 2: Soil Science and Management

Various aspects of soil, including its physical and chemical properties. Interpretation of soil test reports, Soil texture classification, Important features: porosity, bulk density, particle density, and structure, Water holding capacity, pH, electrical conductivity (EC), cation exchange capacity (CEC), Soil solution and classification based on agro-climatic zones.

Types of soils: acid, alkaline, saline: Correction techniques for acid, alkaline, and saline soils; Soil organic matter and its role in influencing soil properties and fertility; Practices for recycling organic matter in the field; Soil fertility, productivity, Various manures, bio-fertilizers, essential plant nutrient elements, deficiency symptoms, Chemical fertilizers and factors affecting soil fertility depletion and its maintenance

Unit 3: Green Spaces Survey and Indoor Gardening Exploration

Significance and Extent. Historical Development and Varieties of Gardens, Notable Garden Characteristics and Constituents of Gardens. Residential Gardens and Garden Structures. Enhancing Elements and Optimal Lighting. Soil, Water, and Energy Conservation through Landscaping. Plant Selection for Aesthetic and Functional Landscape Values. Garden and Lawn Maintenance. Boulevard Trees. Interior Gardens, Rooftop Gardens, Window Gardens. Container Gardens, Aquariums, Hanging Baskets, Mini Landscapes, Rock Gardens. Choosing and Organizing Indoor Potted Plants, their Care, and Sustainable Practices. Preparation for Garden Competitions and Flower Shows. Crafting Floral Ornaments – Garlands, Bangles, Crowns, Veni, Rangoli; Baskets and Bouquets; Boutonnieres and Corsages.

Suggested Readings:

1. Floriculture in India by G.S. Randhava and Amitabha Mukhopadhyay Allied Publishers, PVT. Ltd. 1986. Plant Propagation Principles and Practices by Hartman

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- H.T. Prentice-Hall International: London, 1959. Encyclopedia of Gardening by Christopher Bruckell. Dorling Kindersley, Ltd. 2007.
2. Propagation Hand Book; basic Techniques for Gardeners Mechanicsburg, Pas; stackpok Books, 1995.
3. Horticulture, Principles and Practices by George Acquaah. 4th edition, Pearson Publisher, Prentice Hall, 2009.
4. Gardening in India by Bose, T.K and Mukerjee, D. New Delhi Oxford & IBH Pub. Co. Pvt. Ltd, 1977.
5. Textbook of Horticulture by Mani Bhushan Rao. Macmillan India Ltd. 2005 (2nd edition).
6. Introduction to Horticulture by Kumar, N. 7th edition, Oxford & IBH Publishing Company Pvt. Ltd. 2010.
7. Introduction to ornamental Horticulture by J.S. Arora, 1999.
8. Kalyani Publishers, Ludhiana, India. Plant propagation by Sandhu M.K. New Age International Publishers Ltd. 1989.
9. Ornamental plants and Garden design in Tropics and Subtropics (Vol 1 & 2) by T.K. Bose, L.J. Singh, M.K. Sandhu and T.K Maity. Publisher: Daya Publishing House, A division of Astral International Pvt. Ltd. 2015.

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