Virginia Cooperative Extension
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https://www.ext.vsu.edu/urban-agriculture-certificate-program

Sustainable Urban Agriculture Certification Program

Module	Module Topic	Date / Time	Instructors
0	Program Orientation	March 2, 2024 9:00 AM – 3:00 PM	All the course instructors
1	General Principles of Urban Agriculture	March 9, 2024 9:00 AM – 10:30 AM	Dr. Leonard Githinji (lgithinji@vsu.edu)
2	Site Selection and planning, Ecosystem Services and Working with City Planners	March 9, 2024 10:30 AM – 12:00 PM	Dr. Marcus Comer (mcomer@vsu.edu)
3	Basic Botany, Physiology and Environmental Effects of Plant Growth	March 9, 2024 12:30 PM – 3:00 PM	Dr. Leonard Githinji (lgithinji@vsu.edu)
4	Urban Agriculture Entrepreneurship	March 16, 2024 9:00 AM – 11:30 AM	Dr. Theresa Nartea (tnartea@vsu.edu)
5	Weed Management	March 16, 2024 12:00 PM – 3:00 PM	Dr. Leonard Githinji (lgithinji@vsu.edu)
6	Sustainable Soil Management; Urban Soils and Brownfields	March 23, 2024 9:00 AM – 11:30 AM 12:00 PM – 3:00 PM	Dr. Leonard Githinji (lgithinji@vsu.edu)
7	Integrated Insect Pest Management	March 30, 2024 9:00 AM – 11:30 AM 12:00 PM – 3:00 PM	Dr. Doug Pfeiffer (dgpfeiff@vt.edu)
8	Permaculture	April 6, 2024 9:00 AM – 11:30 AM	Mr. Patrick Johnson (nanihva@gmail.com)
9	Business Principles for Urban Agriculture	April 6, 2024 12:00 PM – 3:00 PM	Dr. Theresa Nartea (tnartea@vsu.edu)
10	Plant Disease Management	April 13, 2024 9:00 AM – 11:30 AM 12:00 PM – 3:00 PM	Dr. Zelalem Mersha (zmersha@vsu.edu)
11	Plant Propagation and Nursery Management	April 20, 2024 9:00 AM – 11:30 AM 12:00 PM – 3:00 PM	Dr. Laban Rutto (lrutto@vsu.edu
12	Vegetable Production	April 27, 2024 9:00 AM – 11:30 AM 12:00 PM – 3:00 PM	Dr. Sanjun Gu (sgu@vsu.edu)
13	Hydroponic & Aquaponic Production Systems	May 4, 2024 9:00 AM – 11:30 AM	Mr. Joshua Dusci (jdusci@vsu.edu)
14	Urban Aquaculture	May 4, 2024 12:00 PM – 3:00 PM	Dr. Nicholas Romano (nromano@vsu.edu)
15	Urban Poultry	May 18, 2024 9:00 AM – 11:30 AM	Dr. Dahlia O'Brien (dobrien@vsu.edu)
16	Small Ruminants (Rabbits, Sheep, and Goats)	May 18, 2024 12:00 PM – 3:00 PM	Dr. Dahlia O'Brien (dobrien@vsu.edu)
17	Backyard Livestock Demonstration	June 8, 2024 9:00 AM– 3:00 PM	Dr. Dahlia O'Brien (dobrien@vsu.edu)

MODULE DESCRIPTION

Module 1: General Principles of Urban Agriculture
(Dr. Leonard Githinji, *Associate Prof., Extension Specialist, Sustainable and Urban Agriculture***)**

Participants will learn what urban agriculture is and why it is important. They will also explore some examples of urban agriculture operations including the Community Gardens, Small Urban Farms, Farmer's Markets, Home Vegetable Gardening, School Gardens, Roof Top Gardening, Community Supported Agriculture, and Farm to School. The concept of food desert, defined as geographic areas with limited access to affordable healthy food options will be discussed.

Module 2: Site Selection and Planning, Ecosystem Services and Working with City Planners
(Dr. Marcus Comer, *Associate Prof., Agriculture and Natural Resources***)**

The student will learn about site planning, potential obstacles, Ecosystem Services, and how to work with city planners to avoid pitfalls. Class activities will include: Discussing site-related, government-related, procedure-related, and perception-related obstacles; Explaining Ecosystem Services and why it is important in urban agriculture; and Explaining the importance of working with city planners and effective approaches.

Module 3: Basic Botany, Physiology and Environmental Effects of Plant Growth
(Dr. Leonard Githinji, *Associate Prof., Extension Specialist, Sustainable and Urban Agriculture***)**

Participants will learn the basic botany including the lifecycle of flowering plants, the anatomy of vascular plants and how to identify a diverse range of plants. They will also learn about the various plants physiological processes and how the environmental factors effect plant growth. The knowledge gained will help the participants on how to better select their garden plants and manage the growing environment for successful production and higher yields.

Module 4: Urban Agriculture Entrepreneurship
(Dr. Theresa J. Nartea, *Associate Prof., Extension Specialist-Marketing & Agribusiness***)**

In this module, participants will learn about: 1) Planning production from a marketing viewpoint; 2) Identifying best-fit market outlet types; 3) Finding product pricing; and 4) Farm market regulations.

Module 5: Weed Management
(Dr. Leonard Githinji, *Associate Prof., Extension Specialist, Sustainable and Urban Agriculture***)**

Weeds are plants that are considered undesirable in a particular situation, or simply "plants in the wrong place". Economic losses due to weeds are encountered nearly everywhere weeds occur, especially for vegetables since only a few of them can compete with weeds. For this module participants will learn about the root cause of weeds; Weed seed banks and germination; Proactive weed management strategies; Reactive weed management; Weed-free by design; Weed control tools as well as integrated weed management.

Module 6: Sustainable Soil Management; Urban Soils and Brownfields
(Dr. Leonard Githinji, *Associate Prof., Extension Specialist, Sustainable and Urban Agriculture***)**

"Sustainable" is a word we see everywhere lately and whether the subject is energy, fishing or gardening, it generally means the ability to continue indefinitely without relying much on external inputs. The right thing to do these days in your yard and garden is to practice the art and science of reusing and recycling

organic waste materials, saving water and conserving energy. For this module participants will learn about the physical, chemical and biological soil characteristics, soil fertility, productivity, and management including composting. The concept of "brownfields" and their dangers including debris, dilapidated buildings and toxic chemicals will be discussed as well as well as their clean up and potential redevelopment into urban gardens or farms.

Module 7: Integrated Insect Pest Management
(Dr. Doug Pfeiffer, *Prof., Entomologist***)**

Integrated pest management (IPM), also known as integrated pest control (IPC) is a broad-based approach that integrates practices for economic control of pests. IPM aims to suppress pest populations below the economic injury level (EIL). For this module, participants will learn about the definition of an insect pest; Principles of Insect Pest Management including: Prevention; Pest Identification and Monitoring; Tolerance Levels and Economic Thresholds; and Pest Control Methods. Online resources for chemical and biological control information will be presented.

Module 8: Permaculture
(Mr. Patrick Johnson, *Certified Permaculturalist***)**

Permaculture is a system of agricultural and social design principles centered on simulating or directly utilizing the patterns and features observed in natural ecosystems. For this module, participants will learn how to design agricultural ecosystems that have the diversity, stability, and resilience of natural ecosystems. The instructor will share his personal experience on establishing and managing a permaculture system.

Module 9: Business Principles of Urban Agriculture
(Dr. Theresa J. Nartea, *Associate Prof., Extension Specialist-Marketing & Agribusiness***)**

In this module, participants will learn how to: 1) Develop SMART business goals; 2) Develop a one-page business plan; 3) Use Veggie Compass and Livestock Compass Calculation Budget Spreadsheets; 4) Use small-scale enterprise budgets.

Module 10: Plant Disease Management
(Dr. Zelalem Mersha, *Assistant Prof., Plant Pathology***)**

The goal of plant disease management is to reduce the economic and aesthetic damage caused by plant diseases. For this module, participants will learn about monitoring, diagnostics and integrated management of common diseases affecting vegetables and small fruits. Disease identification and monitoring will focus on common symptoms and signs of diseases in the field or in gardens. Participants will be introduced to clinics and other places where to seek help for disease identification. Integrated disease management options primarily target all non-chemical options that promote plant and soil health thus prevent diseases. Tolerance Levels and Economic Thresholds; Control Methods and Principles of integrated disease management will be covered in detail.

Module 11: Plant Propagation and Nursery Management
(Dr. Laban K. Rutto, *Prof., Horticulture***)**

Plant propagation is the process of creating new *plants* from a variety of sources: seeds, cuttings, bulbs and other *plant* parts. For this module we will cover the common plant propagation methods including starting plants from seed, and vegetative propagation methods including use of cuttings,

slips, splits, and bulbs. Techniques including grafting, budding, layering, and tissue culture will also be discussed. The class will consist of classroom discussions coupled with demonstrations, and hands-on practice. While addressing plant propagation by seed, the instructor will provide in-depth coverage of seed treatment methods e.g. priming, coating, and pelleting, and as a bonus introduce the class to the recently acquired SATEC Concept 2000 seed coating and pelleting machine. Basic principles of media selection, climate control, and principles of nursery management will be covered while addressing the areas mentioned above.

Module 12: Vegetable Production
(Dr. Sanjun Gu, *Associate Prof. and Extension, Horticulture***)**

For this module, participants will learn about the following: Classification systems and identification of the major specialty crops; Cultivation and cropping systems; Field establishment and cultural practices; Fruit tree growth, development & pruning; dormancy, chilling & rest breaking; Flowering, pollination & fruit set, fruit development & thinning; Tree water relations & irrigation, Plant nutrition & fertilization; Root growth & rootstocks; and Postharvest quality & technology.

Module 13 Hydroponic & Aquaponic Production Systems
(Mr. Joshua Dusci, Extension Associate, Climate *Smart***)**

For this module, participants will learn about indoor production systems including hydroponics and aquaponics. Emphasis will be placed on practical application of several management procedures; how to use logical and critical thinking to evaluate plant growth and development as related to these systems.

Module 14: Urban Aquaculture
(Dr. Nicholas Romano, *Associate Prof. and Extension Specialist, Aquaculture***)**

Aquaculture is the farming of aquatic organisms such as fish, crustaceans, mollusks and aquatic plants. For this module, best management practices for limited scale commercial or hobby scale aquaculture (water farming) of fish and shrimp will be discussed. Topics will include planning, facilities and equipment, safety, water quality and quantity, selection of crop, feeds and feeding, waste management, post-harvest handling and marketing. Solutions to seasonal production differences will be shown. Permits, if necessary, and possible regulations will also be discussed.

Module 15: Urban Poultry
(Dr. Dahlia O'Brien, *Prof., Small Ruminant Specialist***)**

For this module, participants will learn about backyard chicken rearing including breed selection, feeding, housing, sanitation, egg production and meat processing and handling. Hands-on exercise will include egg handling, cleaning and safe storage.

Module 16: Small Ruminants (Rabbits, Sheep, and Goat)
(Dr. Dahlia O'Brien, *Prof., Small Ruminant Specialist***)**

For this module, participants will learn about small ruminants (rabbits, sheep and goats): Zoning codes: determining which animals are allowed and under what conditions; Selection: learn how to select healthy animals to make your animal production more successful; Feeding: learn about the nutritional requirements and what you'll have to provide to meet these needs; Breeding and taking care of young stock – learn about the reproductive cycle, when and how to breed, gestation length,

preparing for birthing, and caring for young stock; Housing and equipment – learn about shelter, supplies and/or equipment needed to handle and raise animals in your backyard; and Marketing: learn about how important it is to know who your customers are and how to explore local options to selling your products.

Module 17: Urban Livestock Hands-on Demonstration
(Dr. Dahlia O'Brien, *Prof., Small Ruminant Specialist***)**

For this module, participants will be involved in a hands-on exercise on chickens, quails, and rabbits processing. Proper handling of these livestock species including the pre and post processing of meat products will be discussed in details.