College of Agriculture
VIRGINIA STATE UNIVERSITY

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 6, 2021 9:00 AM – 3:00 PM	All the course instructors
1	General Principles of Urban Agriculture	March 13, 2021 9:00 AM – 10:30 AM	Dr. Leonard Githinji (lgithinji@vsu.edu)
2	Site Selection and planning, Ecosystem Services	March 13, 2021 10:30 AM – 12:00 PM	Dr. Marcus Comer (mcomer@vsu.edu)
3	Basic Botany, Physiology and Environ. Effects of Plant Growth	March 13, 2021 12:30 PM – 3:00 PM	Dr. Leonard Githinji (lgithinji@vsu.edu)
4	Approaching Urban Agriculture with an Entrepreneurial Mindset	March 20, 2021 9:00 AM – 11:30 AM	Dr. Larry Connatser (lconnatser@vsu.edu)
5	Business Principles for Urban Agriculture	March 20, 2021 12:00 PM – 3:00 PM	Dr. Richard Omotoye (ROmotoye@vsu.edu)
6	Sustainable Soil Management; Urban Soils and Brownfields	March 27, 2021 9:00 AM – 11:30 AM 12:00 PM – 3:00 PM	Dr. Leonard Githinji (lgithinji@vsu.edu)
7	Insect Pest Management	April 3, 2021 9:00 AM – 11:30 AM 12:00 PM – 3:00 PM	Dr. Doug Pfeiffer (dgpfeiff@vt.edu)
8	Permaculture	April 10, 2021 9:00 AM – 11:30 AM	Mr. Patrick Johnson (nanihva@gmail.com)
9	Weed Management	April 10, 2021 12:00 PM – 3:00 PM	Dr. Leonard Githinji (lgithinji@vsu.edu)
10	Plant Propagation and Nursery Management	April 17, 2021 9:00 AM – 11:30 AM 12:00 PM – 3:00 PM	Dr. Laban Rutto (lrutto@vsu.edu
11	Plant Disease Management	April 24, 2021 9:00 AM – 11:30 AM 12:00 PM – 3:00 PM	Dr. Zelalem Mersha (zmersha@vsu.edu)
12	Greenhouse Production, Hydroponics & Aquaponics Systems	May 1, 2021 9:00 AM – 11:30 AM	Mr. Chris Mullins (cmullins@vsu.edu)
13	Urban Aquaculture	May 1, 2021 12:00 PM – 3:00 PM	Dr. Brian Nerrie (bnerrie@vsu.edu)
14	Urban Poultry	May 8, 2021 9:00 AM – 11:30 AM	Mr. Tracy Porter (tporter@vsu.edu)

15	Small Ruminants (Rabbits, Sheep and Goats)	May 8, 2021 12:00 PM – 3:00 PM	Dr. Dahlia O'Brien (dobrien@vsu.edu)
16	Vegetable and Small Fruit Production	May 15, 2021 9:00 AM – 3:00 PM	Dr. Reza Rafie (arafie@vsu.edu
17	Backyard Livestock Demonstration	May 22, 2021 9:00 AM – 11:30 AM 12:00 PM – 3:00 PM	Mr. Tracy Porter and Dr. Dahlia O'Brien

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 & 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 on 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: Approaching Urban Agriculture with an Entrepreneurial Mindset
(Dr. Larry Connatser, *Assistant Prof., Family Financial Management*

"Building a business is not rocket science; it's about having a great idea and seeing it through with integrity." Richard Branson.; "At 211 degrees, water is hot. At 212 degrees, it boils. And with boiling water, comes steam. And with steam, you can power a train." S.L. Parker. This program will discuss what is the Entrepreneurial Mindset? Where do you get it? Can you develop it? Why is it important? Do you already have it? How do you know? Having an entrepreneurial mindset is critical to fulfilling one's potential, and especially in being successful as an entrepreneur. No other attribute, personality, inherent entrepreneurial proclivities, training, or demographic profile is common to all successful entrepreneurs whether Warren Buffet, Steve Jobs, the neighborhood florist, grocer or urban farmer.

Module 5: Business Principles of Urban Agriculture
Dr. Richard Omotoye *Prof, Agricultural Business & Economics Program*)

During this module, participants will learn the basic principles of establishing and/or managing an urban agriculture business enterprise using a hands-on approach. The knowledge gain will include how to develop, prepare, and complete urban agriculture business plans using computer spreadsheets.

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: Plant Propagation and Nursery Management
(Dr. Laban K. Rutto, *Associate Prof., Alternative Crops*)

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 8: Permaculture
(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: 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 10: 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 11: 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 12 Greenhouse Production, Hydroponic & Aquaponics
(Chris Mullins, *Assistant Prof., and Extension Specialist, Greenhouse***)**

For this module, participants will learn the basic principles of greenhouse operation and management including propagation, environmental control, irrigation, economically important crops, and pest control. They will also learn about the selection, construction, use and management of season extension technologies such as high tunnels, low tunnels and row covers. Alternative production systems i.e. hydroponics and aquaponics will be discussed. Emphasis in all subject areas 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 greenhouse and alternative production system conditions; and Systematic thinking process to identify problems in the greenhouse/high tunnel environment.

Module 13: Urban Aquaculture
(Dr. Brian Nerrie, *Guest Professor, 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 14: Urban Poultry
(Mr. Tracy Porter, *Small Farm Outreach Program***)**

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 15: Small Ruminants
(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 16: Vegetable and Small Fruit Production
(Dr. Reza Rafie, *Prof., and Extension Horticulture Specialist***)**

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 17: Urban Livestock Hands-on Demonstration
(Tracy Porter*, Small Farm Outreach Program* and **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.