

Sustainable Urban Agriculture Certification Program

Module	Module Topic	Date	Instructors
1	General Principles of Urban Agriculture	March 9, 2019	Dr. Leonard Githinji (lgithinji@vsu.edu)
2	Basic Botany, Physiology and Environmental Effects of Plant Growth	March 9, 2019	Dr. Leonard Githinji (lgithinji@vsu.edu)
3	Approaching Urban Agriculture with an Entrepreneurial Mindset	March 16, 2019	Dr. Larry Connatser (lconnatser@vsu.edu)
4	Business Principles for Urban Agriculture	March 16, 2019	Dr. Theresa Nartea (tnartea@vsu.edu)
5	Sustainable Soil Management; Urban Soils and Brownfields	March 23, 2019	Dr. Leonard Githinji (lgithinji@vsu.edu)
6	Plant Propagation and Nursery Management	March 30, 2019	Dr. Laban Rutto (lrutto@vsu.edu)
7	Permaculture	March 30, 2019	Mr. Patrick Johnson (nanhva@gmail.com)
8	Insect Pest Management	April 6, 2019	Dr. Doug Pfeiffer (dgpfeiff@vt.edu)
9	Weed Management	April 13, 2019	Dr. Ramon Arancibia (aran@vt.edu)
10	Plant Disease Management	April 20, 2019	Dr. Steve Rideout (srideout@vt.edu)
11	Greenhouse Production, Hydroponics & Aquaponics Systems	April 27, 2019	Mr. Chris Mullins (cmullins@vsu.edu)
12	Urban Aquaculture	April 27, 2019	Dr. Brian Nerrie (bnerrie@vsu.edu)
13	Backyard Chicken Rearing	May 4, 2019	Mr. Tracy Porter (tporter@vsu.edu)
14	Backyard Rabbits Rearing	May 11, 2019	Dr. Dahlia O'Brien (dobrien@vsu.edu)
15	Animal Health and Hygiene for Backyard Livestock	May 18, 2019	Dr. Eunice Ndegwa (endegwa@vsu.edu)
16	Backyard Livestock Hands-on Exercise	May 18, 2019	Dr. Dahlia O'Brien; Mr. Tracy Porter; Mr. Greg Dommert (greg.dommert@gmail.com)
17	Vegetable and Small Fruit Production	May 26, 2019	Dr. Reza Rafie (arafie@vsu.edu)

Meeting times: Session 1: 9:00 A.M. - 12:00 P.M. Session 2: 1:00 P.M. - 3:00 P.M. Required

Orientation: March 2, 2019

Module 1: General Principles of Urban Agriculture

(Dr. Leonard Githinji, Assistant Prof. and 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: Basic Botany, Physiology and Environmental Effects on Plant Growth

(Dr. Leonard Githinji, Assistant Prof. and 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 3: Approaching Urban Agriculture with an Entrepreneurial Mindset

(Dr. Larry Connatser, Assistant Prof. Family Financial Management Specialist)

“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 4: Business Principles of Urban Agriculture

(Dr. Theresa Nartea, Assistant Prof. and Extension Specialist, Marketing & Agribusiness)

Prerequisite: Working knowledge of Microsoft Word and Microsoft Excel. Participants are requested to bring to class their personal laptop, with MS Word/MS Excel software installed. During this module, participants will learn the essential business and marketing information needed to develop their own customized urban farm business plan. Participants will gain knowledge on how to develop, prepare, and complete a customized an urban farm business plan using provided computer-based worksheet templates in MS Word and MS Excel.

Module 5: Sustainable Soil Management; Urban Soils and Brownfields

(Dr. Leonard Githinji, Assistant Prof. and 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 6: 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 7: 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 8: 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 9: Weed Management
(Dr. Ramon Arancibia, Assistant Prof., Horticulture)

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 10: Plant Disease Management
(Dr. Steve Rideout, Associate Prof., Vegetable Crop Diseases)

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 the common diseases affecting vegetables and small fruits and plant disease management including: Prevention; Disease Identification and Monitoring; Tolerance Levels and Economic Thresholds; Control Methods and Principles of integrated disease management.

Module 11 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 12: Urban Aquaculture
(Dr. Brian Nerrie, Assistant Professor, Aquaculture Extension Specialist)

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 13: Backyard Chicken Rearing
(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 14: Backyard Rabbits Rearing
(Dr. Dahlia O'Brien, Associate Prof., Small Ruminant Specialist)

For this module, participants will learn about rabbits: **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 15: Animal Health and Hygiene for Backyard Livestock
(Dr. Eunice Ndegwa, Assistant Prof., Animal Health Research)

For this module, participants will learn about raising healthy and happy animals in their communities using the *One Health* approach. They will learn about common disease and health conditions to watch out for in backyard livestock that are important to animal and public health. They will also learn best management practices and biosecurity protocols and skills to prevent and control them.

Module 16: Backyard Livestock Hands-on Exercise

(Dr. Dahlia O'Brien, Associate Prof., Small Ruminant Specialist)

(Tracy Porter, Small Farm Outreach Program)

(Greg Dommert, Master Gardener)

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.

Module 17: 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 vegetable crops and cultivars; Ecological regions for vegetables, and Environmental and cultural requirements; 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.