
Sustainable Urban Agriculture Certification Program

Global food demand will double by 2050, leading to significant increase in food insecurity. In the commonwealth of Virginia the rate of food insecurity exceeds 12%, meaning that over 900,000 people do not know from where their next meal will come. Nearly 18% of Virginia is a food desert, or an area with limited access to fresh fruits and vegetables. Thankfully, urban agriculture can serve to fill the gaping hole, by increasing food production and access in the cities. In addition, urban agriculture benefits the economy, environment, and well-being of those active in the industry, as well as residents who enjoy its products. It plays a role in programs and projects that target health and nutrition, the environment, enterprise development, income generation, water and sanitation, youth and women, and food production and supply.

Program Length/Structure: Each Certificate Program consists of 10 Modules. Classes meet on Saturday from 9:00 A.M.-12:00 P.M. (Session 1) and 1:00 P.M.-3:00 P.M. (Session 2). A certificate of completion will be issued at the successful completion of all classes, participation in apprenticeship program and presenting a student seminar.

Apprenticeship: The apprenticeship opportunity is designed to complement courses by providing the practical application of course material. Certificate students that have completed the necessary core courses will choose between a range of apprenticeships that meets their needs and interests at one of the urban farms and gardens around the city. The 80 hour (minimum) apprenticeship can occur on a part-time or full-time basis, but it must be completed within 4 months.

Seminar: Students who have completed their apprenticeship and course requirements will give a seminar related to the results of their apprenticeship.

Registration:

Cost: To receive a certificate in Sustainable Urban Agriculture, participants will pay a one-time fee of \$190. Payment will be made at the time of the first class by a check payable to Virginia State University. Students are encouraged to apply for scholarships that will be awarded on a first come, first served basis.

Program Site: Unless otherwise noted, classes will meet at the Virginia State University's Randolph Farm Pavilion, located at 4415 River Road, Petersburg, VA.

Module #	Module Topic	Date	Instructors
1 A	General Principles of Urban Agriculture	March 11, 2017	Dr. Leonard Githinji (lgithinji@vsu.edu)
1 B	Basic Botany, Physiology and Environmental Effects of Plant Growth	March 11, 2017	Dr. Leonard Githinji (lgithinji@vsu.edu)
2 A	Approaching Urban Agriculture with an Entrepreneurial Mindset	March 18, 2017	Dr. Larry Connatser (lconnatser@vsu.edu)
2 B	Business Principles for Urban Agriculture	March 18, 2017	Dr. Theresa Nartea (tnartea@vsu.edu)
3A	Sustainable Soil Management; Urban Soils and Brownfields	March 25, 2017	Dr. Leonard Githinji (lgithinji@vsu.edu)
3B	Garden and Landscape Design; Bio intensive Farming; Permaculture	March 25, 2017	Dr. L. Githinji (lgithinji@vsu.edu)
4	Weed Management	April 1, 2017	Dr. Charlie Cahoon (cwcahoon@vt.edu)
5	Plant Disease Management	April 8, 2017	Dr. Steve Rideout (srideout@vt.edu)
6	Insect Pest Management	April 15, 2017	Dr. Doug Pfeiffer (dgpfeiff@vt.edu)
7A	Greenhouse Production, Hydroponic & Aquaponics	April 22, 2017	Mr. C. Mullins (cmullins@vsu.edu)
7B	Vegetable and Small Fruit Production	April 22, 2017	Dr. R. Rafie (arafie@vsu.edu)
8	Plant propagation and nursery management	April 29, 2017	Dr. Laban Rutto (lrutto@vsu.edu)
9	Animal Husbandry I	May 6, 2017	Dr. D. O'Brien (dobrien@vsu.edu)
10	Animal Husbandry II	May 13, 2017	Dr. B. Nerrie (bnerrie@vsu.edu)

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

Module 1 A: General Principles of Urban Agriculture

(Dr. Leonard Githinji, Assistant Prof. and Extension Specialist, Sustainable and Urban Agriculture)

For this module 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 where with limited access to affordable healthy food options will be discussed.

Module 1 B: 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 2 A: 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 of urban farmer.

Module 2 B: 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 in 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 3 A: 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 on external inputs. The right thing to do these days in your yard and garden is to practice practices of reusing and recycling materials in the garden, saving water and conserving energy. For this module participants will learn about the physical, chemical and biological soil characteristics, soil fertility, productivity, and soil management including composting. The concept of “brownfields” and their dangers including debris, dilapidated buildings and

toxic chemicals will be discussed as well as their clean up and potential redevelopment into edible gardens and urban farms.

Module 3 B: Garden and Landscape Design; Biointensive Farming; Permaculture
(Dr. Leonard Githinji, Assistant Prof. and Extension Specialist, Sustainable and Urban Agriculture)

Garden and Landscape Design: The garden and landscape design module will offer a very interactive learning session where participants will learn how to assess landscape conditions for gardening, how to create stunning gardens, and how to select the right plants for the right place. Participant will be taught about crop rotation, companion planting (compatibles and incompatibles), and crop planting calendar. **Biointensive agriculture:** Participants will learn how to maximize yields from a minimum area of land, while promoting biodiversity and sustainability of their gardens. **Permaculture:** Participants will learn how to design agricultural ecosystems that have the diversity, stability, and resilience of natural ecosystems. Hands-on activity: Each participant will learn how to develop a computer-based garden design using a Garden Planner software, and use the design to establish a similar garden in the real world.

Module 4: Weed Management
(Dr. Charles Cahoon, Assistant Prof., Weed Management)

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 5: Disease Management
(Dr. Steve Rideout, Associate Prof., Vegetable Crop 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 6: Insect Pest Management
(Dr. Doug Pfeiffer, Prof., Entomologist)

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. The principles of integrated pest management will be discussed.

Module 7A: Greenhouse Production, Hydroponic & Aquaponics
(Chris Mullins, Assistant Prof., and Extension Specialist, Greenhouse)

Participants in this module will learn the basic principles of greenhouse operation and management including propagation, environmental control, irrigation, economically important crops, and pest control. Participants will 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 studied. Emphasis in all subject areas will be placed on practical application of several management procedures. Participants will understand how to use logic and critical thinking to evaluate plant growth and development as related to greenhouse and alternative production

system conditions. Students will also develop a systematic thinking process to identify problems in the greenhouse/high tunnel environment.

Module 7B: Vegetable and Small Fruit Production

(Dr. Reza Rafie, Prof., and Extension Horticulture Specialist)

For this module, participants will learn the following: Vegetable 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.

Module 8: Plant Propagation and Nursery Management

(Dr. Laban K. Rutto, Associate Prof., Alternative Crops)

This module will cover 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. Classes will consist of classroom discussions coupled with demonstrations, and hands-on practice. While addressing plant propagation by seed, Dr. Rutto 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 9: Animal Husbandry I

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

For this module, participants will learn about the following topics as it relates to small ruminants, poultry and 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; **Health** – healthy animals are more productive, profitable and enjoyable to raise so you'll learn about prevention, diagnosis and treatment of common diseases; **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 10: Animal Husbandry II

(Dr. Brian Nerrie, Assistant Professor, Aquaculture Extension Specialist)

For this module, best management practices for limited scale commercial or hobby scale aquaculture (water farming) of fish and shrimp will be addressed. 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.