

# THE WAGNER FREE INSTITUTE OF SCIENCE

Winter 2018  
BOTANY SERIES  
**The Real Dirt: The Science Behind Soil**  
Professor Karen Snetselaar

This course will be held at the **Pennsylvania Horticultural Society**, 100 N. 20<sup>th</sup> Street (20<sup>th</sup> and Arch Streets), Philadelphia, PA.

**Dates:** 6 Tuesdays, January 16 - February 20, 2018

LECTURES ARE HELD FROM 6:30 to 7:30 PM

## Course Description

This course will investigate several aspects of soil, with a focus on their relevance to plant growth. Topics will include the physical nature of soil and a brief discussion of soil chemistry. We will focus most attention on nutrient cycling and soil ecology. Which soil microbes are most beneficial to plant growth? Which can be harmful? How can we promote growth of plants with appropriate management of soil conditions? The interaction of plant roots with soil microbes, including symbiotic interactions such as mycorrhizal roots, will also be discussed.

## Course Schedule

- 1. Tuesday, January 16, 2018**  
Organic matter in soils. Reading: Sections 1-4.
- 2. Tuesday, January 23, 2018**  
Non-biotic components of soil. Reading: Section 5.
- 3. Tuesday, January 30, 2018**  
Nutrients in soil. Reading: Sections 7, 18-20.
- 4. Tuesday, February 6, 2018**  
Compaction, erosion and other challenges. Reading: Sections 6, 14, 15.
- 5. Tuesday, February 13, 2018**  
Compost and other additions. Reading: Sections 10, 11, 12, 13.
- 6. Tuesday, February 20, 2018**  
Pests, diseases and other maintenance issues. Reading: Sections 8, 22.

Tuesday, February 27, 2018 – make-up class (if needed)

### **Recommended Textbook**

Building Soils for Better Crops, 3<sup>rd</sup> edition. By Fred Magdoff and C Harold van Es. Produced by Sustainable Agriculture Research and Education (SARE).

This book is available as an e-book or in online format for free, at

<https://www.sare.org/Learning-Center/Books/Building-Soils-for-Better-Crops-3rd-Edition>.

The print copy can be ordered from that webpage as well.

**Dr. Karen Snetselaar** is Director of Biology Graduate Programs and Professor of Biology at Saint Joseph's University. She has been a member of the Wagner's faculty since 2000. Her research focuses on fungi and plant disease. She is also interested in urban ecology and in promoting public understanding of science, especially science education outreach into K-12 schools.

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