

# Ecampus | SOIL 511



## SOIL: A Natural and Societal Resource

**Course Time/Credits** Winter Term; 4 Jan – 19 March 2021, 3 term/quarter credits

**Course Location** Ecampus online program; Oregon State University (OSU); Corvallis, OR.

**Course Description** Serves degree- and non-degree-seeking graduate learners wanting soil science knowledge but having minimal science background. Understanding soil physical, chemical, and biological properties promotes informed soil management and supports individual to global societal values. Curriculum facilitates graduate degrees or certificates; continuing education/licensure renewal requirements (CEUs), professional development units (PDUs) for K-12 and college science teachers, and self-improvement goals of natural resource organization members or private individuals.

**Prerequisite** Graduate standing: a 4-year undergraduate degree from an accredited institution. Applies to degree- and non-degree-seeking learners.

**Note:** For the Winter 2021 term, undergraduate seniors from any discipline may also register.

**Co-Requisites** None. Call OSU Ecampus 800-667-1465 /541-737-9204; review Admission requirements (<https://ecampus.oregonstate.edu/about/admissions-requirements.htm>) and register online; or download a General Syllabus from the Ecampus Winter 2021 SOIL courses web site (<https://ecampus.oregonstate.edu/soc/ecatalog/ecourselist.htm?termcode=202002&subject=SOIL>). About week 2 in Dec. 2020, non-degree learners must contact Dr. Liegel for an “override” to register.

**Why Take SOIL 511?** An interactive Discussion Forum framework supports student-student, instructor-student, and student-curriculum learning interactions. Learners link Discussion Forums with new weekly knowledge to identify, analyze, and summarize a chosen “Soils Problem” or “Soils Topic” in a short, ≤7-page Case Study that replaces a Final Exam. For example: How does soil moisture affect plants/veggies grown in patio pots, community gardens, a family farm, or corporate lands?

**Course Rationale** No text is required; most learning resources are purposely “Open Source.” Course non-technical and technical readings, videos, narrated slide shows, and assignments provide practical information about how soil management influences world food production, fosters sustainable production of agricultural and forest crops, provides clean water, allows proper waste disposal, and aids water recycling. Learners 1) identify activities that positively or negatively impact soils in natural and disturbed environments and 2) assess effects of these impacts on societal goals.

**Major Learner Outcomes** Identify and compare factors that motivate individuals, landowners, land managers, politicians, and other stakeholders: Why choose “use, enhancement, or protection” of soil resources? Such choices affect how individuals, families, and local to national institutions and governments prioritize soil management across rural, urban, and mixed-use landscapes.

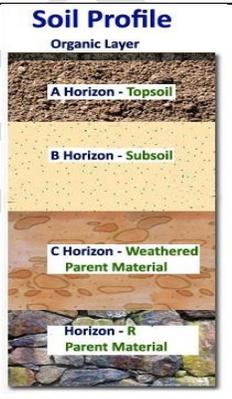
### Information/Co-Instructor Contacts

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-- **Questions About** Soil Biological, Chemical, and Physical Properties Studied in SOIL 511 --

 <p><b>1-</b> Raised garden beds and community garden plots produce veggies, herbs, and flowers for individuals and small families. “Can small-scale food production and/or commercial organic farming offset global food insecurity?” [Weeks 1, 3, 7]</p>	 <p><b>2-</b> Some forage, seed, and green manure crops provide animal feed or cash for landowners. They also minimize soil erosion forces and downslope movement of crop stubble, soil particles, and organic matter. “Is it always ‘practical’ to overlap soil production vs. soil restoration practices?” [Weeks 1, 9]</p>	 <p><b>3-</b> Stylized soil profile showing surface to underlying bedrock (R) or single and mixed unconsolidated parent materials. “Do topsoil and subsoil really describe soil properties?” [Weeks 2 - 6, 8, 10]</p>	 <p><b>4-</b> Soil carbon and organic matter content, including carbon storage, are affected by tillage practices, timing, and crop rotation. “How might climate change influence soil carbon and organic matter storage plus crop production at local, regional, national, and global scales?” [Week 8]</p>	 <p><b>5-</b> Soybeans and other food-feed-fiber-fuel crops now grow on fertilized, nutrient-poor natural Brazilian savannas having unpalatable grass for beef cattle. <b>A)</b> “Is soil management and crop production on such soils sustainable for the long-term?” <b>B)</b> “Can both tools replace global food insecurity with food security for billions of humans?” [Weeks 1 - 10]</p>
<p><b>Photo Credits</b></p> <p><b>1-</b> Raised beds: <b>Top:</b> C. Pieslewicz / L. Liegel front yard, 2014; <b>Bottom:</b> <a href="https://www.diversityinsteam.com/2018/11/dovers-first-robotic-community-garden/">https://www.diversityinsteam.com/2018/11/dovers-first-robotic-community-garden/</a> Accessed 28 April 2020.</p> <p><b>2-</b> <a href="https://www.infonet-biovision.org/PlantHealth/Green-Manure-Cover-Crop-Legumes">https://www.infonet-biovision.org/PlantHealth/Green-Manure-Cover-Crop-Legumes</a> Accessed 28 April 2020.</p> <p><b>3-</b> No date; unknown source with corrected “R-Horizon” caption.</p> <p><b>4-</b> <a href="https://horizon-magazine.eu/article/recharging-soils-carbon-could-make-farms-more-productive.html">https://horizon-magazine.eu/article/recharging-soils-carbon-could-make-farms-more-productive.html</a> Accessed 28 April 2020.</p> <p><b>5-</b> The Nature Conservancy. No Date. In section heading: “Voices From the Field.” <a href="https://www.nature.org/en-us/about-us/where-we-work/latin-america/brazil/stories-in-brazil/sustainable-soy/">https://www.nature.org/en-us/about-us/where-we-work/latin-america/brazil/stories-in-brazil/sustainable-soy/</a> Accessed 28 April 2020.</p>				

**Personal Notes.....**