

"It is difficult to develop a curriculum for an introductory soils course by yourself, you need to have input from all disciplines of soil science."



Over 30 Videos, Podcasts, and Animations

"The online lessons were great. I loved that there were so many visuals."

Course Development

Three years ago, a broad range of faculty members contributed individual Powerpoint lessons from their area of expertise. After numerous revisions and upgrades, the individual lessons have evolved into a comprehensive introductory course. The course currently consists of 30 lessons and a summary, five hands-on laboratory assignments and five exams.

Soil Function Soil Genesis Soil Horizons Texture Density Structure Color Water Mineralogy pH, Alkalinity **Organic Matter Cation Exchange** Salinity Biology Macronutrients



5 Hands-On Labs

"The labs made the course a hands"

on course which I really liked."

"The exams are perfect."

Course Implementation

Since its induction in 2008, the course has been taught to197 students in 8 sections. Both adult learners and traditional undergraduates have taken the course during spring, summer and fall semesters. In the course the students use the online interface and are expected to perform the laboratory assignments in the field.

A Digital Introductory Soils Course for the Virtual Classroom Gary Petersen, Blake Ketchum, Charles Walker, and Akbar Khouzani: Penn State University Gwp2@psu.edu

30 Multimedia Lessons

Micronutrients **Nutrient Management Soil Acidity** Taxonomy Survey and Mapping Geospatial tools Web Soil Survey Hydrologic Cycle Land Development Hydromorphic Features Wetlands Tillage Conservation Degradation **Urban Soils** Applications



Results and Future

We have successfully created a course in which independent students can excel. The course not only provides fundamental information about soils, but it also stimulates critical thinking. Future plans include: adding podcasts, so that students can learn in the field, and increasing the audience to promote interest in soil science. Positive feedback from students has demonstrated that our online course has successfully implemented independent field laboratory assignments.

Gary Petersen, Blake Ketchum, Charles Walker, and Akbar Khouzani; Penn State University. gwp2@psu.edu

Undergraduates

PENNSTATE

"I really got a lot out of this class and even though it was online, it has been one to the most enjoyable classes that I have taken so far at Penn State."

Adult Learners

"Thank you, this was probably the most interesting class I have ever taken."

"This course was excellent."

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