Term Information

Effective Term	Autumn 2022
Previous Value	*Summer 2012*

Course Change Information

What change is being proposed? (If more than one, what changes are being proposed?)

Submission for new GE approval as Natural Science 3+1; permanent approval of 100% DL section; addition of all campuses as available for offerings as required by new GE; updates to course topics

What is the rationale for the proposed change(s)?

New GE; successful run of the class online during pandemic temporary approval; course topic updates provide additional detail

What are the programmatic implications of the proposed change(s)?

(e.g. program requirements to be added or removed, changes to be made in available resources, effect on other programs that use the course)?

n/a

Is approval of the requrest contingent upon the approval of other course or curricular program request? No

Is this a request to withdraw the course? No

General Information

Course Bulletin Listing/Subject Area	Environment & Natural Resource
Fiscal Unit/Academic Org	Sch of Enviro&Natural Res - D1173
College/Academic Group	Food, Agric & Environ Science
Level/Career	Undergraduate
Course Number/Catalog	3000
Course Title	Soil Science
Transcript Abbreviation	Soil Science
Course Description	Introduction to soil physical, chemical, and biological properties related to land use, environmental quality, and crop production.
Previous Value	*Introduction to soil physical, chemical, and biological properties related to land use, environmental quality, and crop production.* *Au, Sp Sems.*
Semester Credit Hours/Units	Fixed: 3

Offering Information

Length Of Course	14 Week, 12 Week
Flexibly Scheduled Course	Never
Does any section of this course have a distance education component?	Yes
Is any section of the course offered	100% at a distance
Previous Value	*Yes, Less than 50% at a distance*
Grading Basis	Letter Grade
Repeatable	No
Course Components	Lecture
Grade Roster Component	Lecture
Credit Available by Exam	Yes
Exam Type	Departmental Exams, EM Tests via Office of Testing

Admission Condition Course	Yes
Admission Condition	Natural Science
Off Campus	Never
Campus of Offering	Columbus, Lima, Mansfield, Marion, Newark, Wooster
Previous Value	*Columbus*

Prerequisites and Exclusions

Prerequisites/Corequisites	
Exclusions	
Previous Value	Not open to students with credit for 300.01.
Electronically Enforced	No

Cross-Listings

Cross-Listings

Subject/CIP Code

Subject/CIP Code	01.1201
Subsidy Level	Baccalaureate Course
Intended Rank	Sophomore, Junior, Senior

Requirement/Elective Designation

Required for this unit's degrees, majors, and/or minors
General Education course:
Physical Science; Natural Sciences
The course is an elective (for this or other units) or is a service course for other units

Previous Value

Required for this unit's degrees, majors, and/or minors
General Education course:
Physical Science
The course is an elective (for this or other units) or is a service course for other units

Course Details

Course goals or learning objectives/outcomes

- Understand basic concepts and vocabulary of soil science including the physical, chemical and biological properties of soils and their interactions with other components of forest, wetland, agricultural, and grassland ecosystems
- Gain knowledge about how soil properties and behavior will help shape decisions regarding appropriate use and management of the valuable soil resource
- Understand how soils are formed and classified
- Gain knowledge about important soil processes and their influence on soil behavior
- Examine the role of soils in a variety of terrestrial ecosystems
- Develop an appreciation for the world soil resource base and the importance of its conservation

Previous Value

- *Understand basic concepts and vocabulary of soil science including the physical, chemical and biological properties of soils and their interactions with other components of forest, wetland, agricultural, and grassland ecosystems*
- *Gain knowledge about soil properties and behavior will help shape decisions regarding appropriate use and management of the valuable soil resource*
- *Understand how soils are formed and classified*
- *Gain knowledge about important soil processes and their influence on soil behavior*
- *Examine the role of soils in a variety of terrestrial ecosystems*
- *Develop an appreciation for the world soil resource base and the importance of its conservation*

Content Topic List

- Mineral Components; Soil Color; Soil Texture; Soil Organic Matter; Soil Aggregation & Structure
- Soil Pore and Solution Properties
- Soil Organisms
- Soil & the Geologic Cycle
- Soil & the Hydrologic Cycle
- Soil & Earth's Thermal Energy Cycles
- Soil & the Carbon Cycle
- Soil & the Oxygen Cycle
- Soil & K, Mg and Ca Cycling
- Soil & the Nitrogen Cycle
- Soil & the Phosphorus Cycle
- Soil & the Sulfur Cycle
- US Soil Taxonomy and the Soil Orders

Previous Value

- *The value of soils and soil ecosystem services*
- *Genesis*
- *Mapping and classification of soils*
- *Distribution of major soil groups in the U.S. and the world*
- *Soil forming factors*
- *Soil physical properties: texture, air, and water*
- *Soil chemical properties: minerals, nutrients, reactions*
- *Soil biology and ecology*
- *Biogeochemical cycles*

Sought Concurrence

No

Attachments

- Distance Approval Cover Sheet Generic- ENR 3000.docx: Distance Cover Sheet

  (Other Supporting Documentation. Owner: Fries,Sara Nicholson)
- ENR 3000 GE-foundations-ENR 3000.pdf: GE Foundations

  (Other Supporting Documentation. Owner: Fries,Sara Nicholson)
- Lecture Syllabus ENR 3000-GE in-person 3-21-2022.docx: ENR 3000 in person

  (Syllabus. Owner: Fries,Sara Nicholson)
- Lecture Syllabus ENR 3000-GE online 3-21-2022.docx: ENR 3000 online

  (Syllabus. Owner: Fries,Sara Nicholson)

Comments

- This is an existing Natural Science GE Course. The changes to the course include adjusting the GE Learning Goals and Outcomes to those of the new Natural Science GE and minor updates to course topics, as well as adding a 100% DL mode (currently approved with a Hybrid Mode, and taught 100% DL during the COVID19 Pandemic). This course is grandfathered into the new GE; and combined with ENR 3001 that is submitted as a course change request, will be a 3+1 Credit hour Natural Science GE. Both courses must be taken to satisfy the Natural Science GE requirement.

  Minor revision as per email message 21 March 2022

  Revise as per COAA via email message 9 March 2022

  Revise as per email message 25 February 2022

  Returned to unit per request *(by Osborne,Jeanne Marie on 03/28/2022 03:59 PM)*

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Fries,Sara Nicholson	02/18/2022 09:07 PM	Submitted for Approval
Revision Requested	Osborne,Jeanne Marie	02/21/2022 10:11 AM	Unit Approval
Submitted	Fries,Sara Nicholson	02/21/2022 10:14 AM	Submitted for Approval
Revision Requested	Osborne,Jeanne Marie	02/25/2022 12:33 PM	Unit Approval
Submitted	Fries,Sara Nicholson	03/02/2022 09:24 PM	Submitted for Approval
Revision Requested	Osborne,Jeanne Marie	03/09/2022 10:57 AM	Unit Approval
Submitted	Fries,Sara Nicholson	03/18/2022 11:42 AM	Submitted for Approval
Revision Requested	Osborne,Jeanne Marie	03/21/2022 11:00 AM	Unit Approval
Submitted	Fries,Sara Nicholson	03/21/2022 02:50 PM	Submitted for Approval
Approved	Osborne,Jeanne Marie	03/29/2022 03:30 PM	Unit Approval
Approved	Osborne,Jeanne Marie	03/29/2022 03:31 PM	SubCollege Approval
Approved	Osborne,Jeanne Marie	03/29/2022 03:31 PM	College Approval
Pending Approval	Cody,Emily Kathryn Jenkins,Mary Ellen Bigler Hanlin,Deborah Kay Hilty,Michael Vankeerbergen,Bernadette Chantal Steele,Rachel Lea	03/29/2022 03:31 PM	ASCCAO Approval

THE OHIO STATE UNIVERSITY

SYLLABUS
ENR 3000

Soil Science Lecture
GE Foundations, Natural Science: 3 credits
AU 2022: Online Sections – Asynchronous

COURSE OVERVIEW

ENR 3000 fulfills 3-credits of the General Education (GE) Category Foundations: Natural Science. It is intended to be taken with the 1-credit GE Foundations: Natural Science laboratory titled "Soil Science Laboratory" (ENR 3001). Together the ENR 3000 lecture (3 credits) and ENR 3001 laboratory (1 credit) fulfill 4-credits of the General Education (GE) Category: Foundations, Natural Science.

ENR 3000 online section will utilize multiple online platforms supported by Ohio State. All content, including lectures, slides, demonstrations, presentations, notes, videos, readings will be delivered through Carmen (https://carmen.osu.edu) or Ohio State Libraries (https://library.osu.edu/). Students will have free access to all course content for the entire semester.

ENR 3000 online is self-paced to give students the ability to access and satisfy requirements within a flexible time frame. Lectures are broken down into weekly modules and students are given 1 week (7 days) to complete each module. All assignments are open book. However, all course requirements must be completed independently by the enrolled student. All assignments, quizzes, and exams must be completed using Carmen.

A free open-textbook, free readings (e.g., journal articles, newspaper articles) and free documentaries will be provided through Carmen, Ohio State PressBooks, Ohio State Libraries, YouTube, academic institutions, professional organizations, and governmental agencies.

Instructor

Instructor: Dr. Tania Burgos Hernández, PhD

Email: burgos-hernandez.1@osu.edu

Office location: Kottman Hall 410 B

Phone: 614-292-2265 (SENR Front Desk)

Office Hours: Times posted on Carmen, can meet in-person or by Zoom

Preferred means of communication:

- My preferred method of communication for questions is **email.**
- My class-wide communications will be sent through the Announcements tool in CarmenCanvas. Please check your notification preferences (go.osu.edu/canvas-notifications) to be sure you receive these messages.

Course Prerequisites

None.

Understanding soils requires a working knowledge of the principles and vocabulary of the sciences, including elementary chemistry. Students attempting to take this course without having received credit for college-level, Introductory Chemistry should be aware that this level of understanding is assumed, and little time will be available to review basic chemistry concepts.

Course description

Introduction to soil physical, chemical, and biological properties related to land use, environmental quality, and crop production.

This course offers a multi-disciplinary overview of soil science where the central premise is that soils occur at the heart of Earth's Critical Zone and substantially interact with bedrock, water, terrestrial organisms, and the near-earth atmosphere. This interaction occurs by way of Earth's Cycles, the circulation of water, carbon, energy, oxygen, nitrogen, phosphorus, and other elements through the Critical Zone components. Thus, we will introduce the students to soil physical, chemical, and biological properties related to land use, environmental quality, and crop production. The magnitudes of various soil properties influence the rates and extent of these circulations. The influence of soil properties on Earth's Cycles is a major focus of the course and is the first step for proper use of the soil resource.

Expected learning outcomes

Course Learning Outcomes

By the end of this course, students will:

- Understand basic concepts and vocabulary of soil science including the physical, chemical and biological properties of soils and their interactions with other components of forest, wetland, agricultural, and grassland ecosystems.
- Gain knowledge about how soil properties and behavior will help shape decisions regarding appropriate use and management of the valuable soil resource.

- Understand how soils are formed and classified.
- Gain knowledge about important soil processes and their influence on soil behavior.
- Understand the role of soils in a variety of terrestrial ecosystems.
- Develop an appreciation for the world soil resource base and the importance of its conservation.

General Education Goals & Expected Learning Outcomes

This course fulfills the General Education (GE) rationale for the Foundations, Natural Science category. ENR 3000 fulfills Specific Goals 1 and 2 Natural Science and Expected Learning Outcome 1.1, 1.2, 2.1, 2.2, and 2.3.

When this 3-credit ENR 3000 lecture is taken in combination with the 1-credit ENR 3001 laboratory, together these 4-credits (i.e., 1-credit laboratory + 3-credit lecture) fulfills ALL Goals (i.e., Goals 1 and 2) and ALL Expected Learning Outcomes (i.e., ELOs 1.1, 1.2, 1.3, 2.1, 2.2, 2.3) for the Foundations, Natural Science GE category.

ENR 3000 FULFILLS

GOAL 1: Successful students will engage in the theoretical and empirical study within the natural sciences, gaining an appreciation of the modern principles, theories, methods, and modes of inquiry used generally across the natural sciences.

Expected Learning Outcome 1.1: Successful students are able to explain basic facts, principles, theories, and methods of modern natural sciences; describe and analyze the process of scientific inquiry.

Expected Learning Outcome 1.2: Successful students are able to identify how key events in the development of science contribute to the ongoing and changing nature of scientific knowledge and methods.

GOAL 2: Successful students will discern the relationship between the theoretical and applied sciences while appreciating the implications of scientific discoveries and the potential impacts of science and technology.

Expected Learning Outcome 2.1: Successful students are able to analyze the inter-dependence and potential impacts of scientific and technological developments.

Expected Learning Outcome 2.2: Successful students are able to evaluate the social and ethical implications of natural scientific discoveries.

Expected Learning Outcome 2.3: Successful students are able to critically evaluate and responsibly use information from the natural sciences.

ENR 3000 and ENR 3001 will promote an understanding of principles, theories, and methods of modern soil science, relationships between science and technology, the implications of scientific discoveries and the potential of science and technology to address problems of the contemporary world, particularly environmental issues, food security, and human health. Students will learn that soil science is an interdisciplinary field of study, which combines practices, theories and methods from the biological sciences, physical sciences and geological sciences. Students will develop an understanding for the pivotal role that soils play in sustaining life on Earth and how nearly all living organisms rely on ecosystem services provided by soils. This course addresses and assesses these learning outcomes through discussion, reflections, experiential learning, and exams.

HOW THIS COURSE WORKS

Mode of delivery: ENR 3000 will be offered all semesters as both in-person section and online section. Students will be able to select the section (i.e., in-person or online) that works best for them.

The online section is a 100% asynchronous online course. There are no required sessions when students must be logged in to Carmen at a scheduled time.

Pace of activities: This course is divided into **weekly modules**. Students are expected to keep pace with weekly deadlines but may schedule their efforts freely within that time frame.

Credit hours and work expectations: This is a **3-credit-hour course**. According to Ohio State policy, students should expect to spend 9 hours per week of the average student's time required to earn the average grade of "C" in this course. A student's 9-hour-workweek includes direct instruction, watching videos, taking notes, studying, readings, assignments, quizzes and exams.

Attendance and participation requirements: Attendance is based on your online activity and participation in Carmen. You are expected to log in to the course in Carmen every week. During most weeks you will probably log in many times. In case of emergency or illness, please contact the instructor as soon as possible.

COURSE MATERIALS AND TECHNOLOGIES

Textbook

- There is no formal textbook for this course. Instead, materials will be posted to Carmen (https://carmen.osu.edu) including PowerPoint Slides of the lectures and corresponding Reading Materials for each chapter. These items can be made available in alternate formats upon request.

RECOMMENDED/OPTIONAL

- *Elements of the Nature and Properties of Soils*, by Ray R. Weil and Nyle C. Brady, Fourth Edition, 2019, Pearson. (Previous editions are fine) **or** another suitable soils textbook; including *The Nature and Properties of Soils* by Brady, Nyle and Ray R Weil, Pearson.
- Select chapters from: *Collapse: How Societies Choose to Fail or Succeed: Revised Edition*. 2010. J. Diamond. Penguin Books. ISBN-10: 0143117009, ISBN-13: 978-0143117001. Chapter 9: One Island, Two Peoples, Two Histories: The Dominican Republic and Haiti.
- Lindbo, D., Havlin, J., Kozlowski, D., & Robinson, C. (2012). *Know soil, know life*. Soil Science Society of America.
- Other required reading in the form of news articles and easy to understand journal articles.

Course technology

For help with your password, university email, Carmen, or any other technology issues, questions, or requests, contact the OSU IT Service Desk. Standard support hours are available at https://ocio.osu.edu/help, and support for urgent issues is available 24/7.

- **Self-Service and Chat support:** http://ocio.osu.edu/selfservice
- **Phone:** 614-688-HELP (4357)
- **Email:** 8help@osu.edu
- **TDD:** 614-688-8743

BASELINE TECHNICAL SKILLS FOR ONLINE COURSES

- Basic computer and web-browsing skills
- Basic skills with Microsoft Word, Excel and PowerPoint
- Navigating Carmen: for questions about specific functionality, see the Canvas Student Guide.

REQUIRED EQUIPMENT

- Computer: current Mac (OS X) or PC (Windows 7+) with high-speed internet connection
- Other: a mobile device (smartphone or tablet) or landline to use for BuckeyePass authentication

REQUIRED SOFTWARE

- Microsoft Office 365: All Ohio State students are now eligible for free Microsoft Office 365 ProPlus through Microsoft's Student Advantage program. Full instructions for downloading and installation can be found at go.osu.edu/office365help.

CARMEN ACCESS

You will need to use BuckeyePass multi-factor authentication to access your courses in Carmen. To ensure that you are able to connect to Carmen at all times, it is recommended that you take the following steps:

- Register multiple devices in case something happens to your primary device. Visit the BuckeyePass - Adding a Device help article for step-by-step instructions.
- Request passcodes to keep as a backup authentication option. When you see the Duo login screen on your computer, click “Enter a Passcode” and then click the “Text me new codes” button that appears. This will text you ten passcodes good for 365 days that can each be used once.
- Download the Duo Mobile application to all of your registered devices for the ability to generate one-time codes in the event that you lose cell, data, or Wi-Fi service.

If none of these options will meet the needs of your situation, you can contact the IT Service Desk at 614-688-4357 (HELP) and the IT support staff will work out a solution with you.

VIDEOS – LINKS AVAILABLE ON CARMEN

- Living Soil.2018. Soil Health Institute
- Topical videos used in the class: available on YouTube

GRADING AND FACULTY RESPONSE

How your grade is calculated

The student will be evaluated based on his/her performance on the following assignments. The breakdown for evaluation is:

ASSIGNMENT CATEGORY	POINTS
Syllabus Quiz (10 points)	2%
Reflection (20 points)	10%
Experiential Learning (20 points)	10%
Exit Slips (4) (10 points each)	20%
Discussion Boards (4) (10 points each)	20%
Midterm	18%
Final Exam	20%
Total	**100%**

**See course schedule for due dates. Everything is due by 11:59PM on Tuesdays.*

A. Syllabus Quiz: (2%) Students will complete one (1) syllabus quiz that will be administered on Carmen. The quiz will open Tuesday at 12:01 pm and will close the following Tuesday at 11:59 pm of the first week of classes. (See schedule for date)

Academic integrity and collaboration: This quiz is open-book, however, students must complete the work on their own without help from peers.

B. Reflection: (10%) In this activity students are expected to write a reflection answering a series of questions provided by the instructor. The reflection will be 2 pages in length, double spaced, font: times new roman, size 12 and will be submitted through Carmen. Readings, data sets, documentaries that are required for writing assignments will all be free and provided through Carmen or links to these materials will be provided on Carmen. The questions will be provided with at least 1 one week before the due date. This assignment is open-book, however, a student must complete the work on their own without help from peers. The reflection is due on a Tuesday at 11:59 pm (see schedule for due date).

Academic integrity and collaboration: Your written assignments should be your own original work. Formatting should follow what will be provided on Carmen. You are encouraged to ask a trusted person to proofread your assignments before you turn them in but no one else should revise or rewrite your work. Plagiarized work will result in a grade of 0% and will be reported to Ohio State Academic Affairs.

ENR 3000 - Objectives of reflection:

1. Understand how soils are involved in what is currently happening to our natural resources, environment, climate, and/or food supplies.
2. Gain experience making informed decisions and developing potential solutions to environmental issues.
3. Gain an appreciation for the importance of soil science
4. Develop an understanding of how soil science has a direct impact on our daily lives

C. Experiential Learning (The Carbon Balance Activity): (10%) This activity consists of calculating soil organic matter for soils under different conditions in Ohio and reflecting on the importance of soil carbon. The activity will consist of two parts. In the first part, you will be using the OSU soil organic matter calculator (we will be uploading everything you need on Carmen) to predict the soil organic matter in a field. To complete these calculations, you will be provided with different scenarios that include different cropping patterns, cover crops, erosion, and manure application. Along with the calculation, you will submit one paragraph. As you will learn in this class, soil carbon is important for many biological functions. Using the results obtained from the organic matter calculations and the information learned in class you will answer the question: why is soil organic carbon important? The information should be concise but informational. The second part consists of a short multiple-choice and T or F quiz.

You will be given 3 weeks to complete this activity. Late submissions will not be accepted. More details on this activity will be discussed during the course and further instructions will be posted to Carmen.

Academic integrity and collaboration: Your carbon balance assignments should be your own original work. Formatting should follow what is provided in Carmen. You are encouraged to ask a trusted person to proofread your assignments before you turn them in but no one else should revise or rewrite your work. Plagiarized work will result in a grade of 0% and will be reported to Ohio State Academic Affairs.

ENR 3000 - Objectives of experiential activity:

1. Understand how different scenarios could change the soil organic matter content.
2. Gain experience using the soil organic matter calculator.
3. Develop skills in how to effectively present data using figures (graphs)
4. Make informed soil management decisions based on scientific data.

Exit slips: (20%) Exit slips will be given four (4) times during the semester (dates are posted on the schedule). These will consist of short answer questions from the material given during the presentations of the same week the exit slip is administered. They are open book/notes. There is no make-up exit slip. If you miss an exit slip you will get an automatic 0. The instructor will post the questions on a Tuesday at

12:01 pm of the respective week and they will be open until the next Tuesday at 11:59 pm. See schedule for dates.

Academic integrity and collaboration: Exit slips are open-book, however, students must complete the work on their own without help from peers.

ENR 3000 - Objectives of exit slips:

1. Evaluate student learning at the end of multiple weeks during the semester.
2. Assess student's understanding of key concepts principles, theories, and methods.
3. Critically evaluate and use information from the soil sciences.
4. Develop skills in how to effectively present data using figures (graphs)
5. Make informed soil management decisions based on scientific data.

Discussion Boards: (20%) For the Discussion Boards, the instructor will post questions related to the topics covered in class to date. You are to address the question and provide relevant supporting information. It is also required that you reply to one post from a classmate.
This assignment will open on Tuesdays at 12:01 pm. This assignment will be due the following Tuesday at 11:59 pm. See the Course Schedule for the due dates of the Discussion Boards. Your discussion posts, should be your own original work. You are encouraged to ask a trusted person to proofread your assignments before you turn them in--but no one else should revise or rewrite your work.

Academic integrity and collaboration: Your written discussion boards should be your own original work. You are encouraged to ask a trusted person to proofread your assignments before you turn them in but no one else should revise or rewrite your work. Plagiarized work will result in a grade of 0% and will be reported to Ohio State Academic Affairs.

ENR 3000 - Objectives of discussion boards:

1. Critically evaluate the use of information from the natural sciences with an emphasis in soil science.
2. Analyze data from graphs and peer review articles.
3. Apply the information learned in class to real-world scenarios.
4. Identify reliable sources of information and use them to discuss soil science-related topics.

Midterm Exam: (18%) The midterm exam will be administered approximately halfway through the semester. It will be open book and open notes and will be on lecture material covered up to the midterm date. Late submissions will not be accepted and will result in a grade of 0%. Missed exams will result in a grade of 0%. All exams must be taken on Carmen. The exam is open-book, however, students must

complete the work on their own without help from peers. The exam will be open for a week and once you open it you will have 80 minutes to complete it.

Academic integrity and collaboration: Exams are open-book, however, students must complete the work on their own without help from peers.

Final Exam: (20%) A semi-comprehensive (all material covered but with an emphasis on material since the midterm exam) final exam will be administered during the scheduled final exam week. It will be open book and open notes and consist of multiple-choice or true/false questions covering selected material presented in the course lectures and readings. There will be a strictly enforced 60-minute time limit for taking the final exam. Late submissions will not be accepted. A study guide will be posted on Carmen to provide guidance in studying for the final exam. The final exam will be accessible for 60 hours as indicated on the Course Schedule table. The exam is open-book, however, students must complete the work on their own without help from peers.

Academic integrity and collaboration: Exams are open-book, however, students must complete the work on their own without help from peers.

ENR 3000 - Objectives of exams (midterm and final):

1. Evaluate student learning in the middle and at the end of the semester.
2. Assess reading comprehension, problem-solving skills, critical thinking and vocabulary usage.
3. Assess understanding of key concepts principles, theories, and methods

Late policy

Late submissions will not be accepted except in the case of emergency or illness. Please refer to Carmen for due dates.

Extenuating circumstances sometimes occur. Students who miss an assignment or exam due to a legitimate reason (e.g., emergency, hospital visit, extended illness) should contact their instructor to request permission to make-up an assignment. The instructor will determine if an excuse is acceptable. If approved, the student must make up the missed assignment within a time frame specified by the instructor. Since this course has assignments open for a period of days to weeks on Carmen, acceptable excuses typically entail lengthy illness, extended hospitalization or other serious issues with official documentation.

The due date for each assignment is provided on Carmen on the very first day of the semester to help students plan their semester. It is the responsibility of the student to know the due date for all assignments. We do this to accommodate students' busy schedules. Students are expected to plan

their semester accordingly. Technical glitches such as a bad internet connection, faulty internet browser, a computer that "crashes", a battery that runs out of power, an obnoxious roommate, software malfunction, a flat tire, etc. are not acceptable excuses for missing a deadline. The instructor does not accept assignments by e-mail, and these will be deleted and not graded. Assignments should always be completed and/or submitted using Carmen.

Grading scale

Letter Grade	%	Mastery
A	93.00–100.0	Demonstrates complete mastery of all learning outcomes as demonstrated on assessments.
A-	90.00–92.99	
B+	87.00–89.99	Demonstrates mastery of at least two learning outcomes as demonstrated on assessments.
B	83.00–86.99	
B-	80.00–82.99	
C+	77.00–79.99	Demonstrates mastery of at least one learning outcome as demonstrated on assessments.
C	73.00–76.99	
C-	70.00–72.99	
D+	67.00–69.99	Fails to meet mastery of any learning outcome such that student will not be successful in higher-level course; did not complete assessments; demonstrated lack of engagement, did not complete assessment in a timely fashion.
D	60.00–66.99	
E	00.00–59.99	

Also, no matter how close your score is to the cutoff there will be no rounding up of scores.

Instructor feedback and response time

- **Grading and feedback:** Multiple-choice quizzes and exams will be graded immediately, and students will know their grade immediately after they submit a quiz or exam. For written assignments, these will be graded by hand, and you can expect a grade and feedback within **7 days**.
- **Email:** Instructor check and reply to emails daily. Please use your OSU email account to send emails.

- **Class announcements:** All important class-wide messages will be sent through the Announcements tool in CarmenCanvas. Please check your notification preferences (go.osu.edu/canvas-notifications) to ensure you receive these messages.
- **Discussion board:** I will check and reply to messages in the discussion boards once mid-week and once at the end of the week.

Communication Guidelines

The following are my expectations for how we should communicate as a class. Above all, please remember to be respectful and thoughtful.

- **Writing style:** While there is no need to participate in class discussions as if you were writing a research paper, you should remember to write using good grammar, spelling, and punctuation. A more conversational tone is fine for non-academic topics. Beware not all students perceive color in the same way. When you use color also use **Bold**, *Italicize* or Underline as emphasis. A good practice is to use the Accessibility Checker in all Microsoft Office 365 products available to all students.
- **Tone and civility**: Let's maintain a supportive learning community where everyone feels safe and where people can disagree amicably. Remember that sarcasm doesn't always come across online. I will provide specific guidance for discussions on controversial or personal topics.
- **Citing your sources**: When we have academic discussions, please cite your sources to back up what you say. For the textbook or other course materials, list at least the title and page numbers. For online sources, include a link.
- **Backing up your work**: Consider composing your academic posts in a word processor, where you can save your work, and then copying into the Carmen discussion.

OTHER COURSE POLICIES

Academic integrity policy

POLICIES FOR THIS ONLINE COURSE

- **Quizzes and exams**: All quizzes and exams are open book. You can use notes, lecture slides, videos, documentaries, the Internet, Google, calculators, books, articles. However, you must complete the midterm and final exams yourself, without any external help or communication. You cannot use a group message App during the exam. You cannot share questions and answers.
- **Written assignments**: Your written assignments, including discussion posts, should be your own original work. In formal assignments, you should follow the APA style to cite the ideas and

words of your research sources. You are encouraged to ask a trusted person to proofread your assignments before you turn them in--but no one else should revise or rewrite your work.

- **Reusing past work**: In general, you are prohibited in university courses from turning in work from a past class to your current class, even if you modify it. If you want to build on past research or revisit a topic you've explored in previous courses, please discuss the situation with your instructor.
- **Collaboration and informal peer-review**: The course includes many opportunities for formal collaboration with your classmates. While study groups and peer-review of major written projects is encouraged, remember that comparing answers on a quiz or assignment is not permitted. If you're unsure about a particular situation, please feel free just to ask ahead of time.

OHIO STATE'S ACADEMIC INTEGRITY POLICY

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the University's *Code of Student Conduct*, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the University's *Code of Student Conduct* and this syllabus may constitute "Academic Misconduct."

The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the University or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the University's *Code of Student Conduct* is never considered an excuse for academic misconduct, so I recommend that you review the *Code of Student Conduct* and, specifically, the sections dealing with academic misconduct.

If I suspect that a student has committed academic misconduct in this course, I am obligated by University Rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the University's *Code of Student Conduct* (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

Other sources of information on academic misconduct (integrity) to which you can refer include:

- The Committee on Academic Misconduct web pages (COAM Home)
- *Ten Suggestions for Preserving Academic Integrity (Ten Suggestions)*
- *Eight Cardinal Rules of Academic Integrity* (www.northwestern.edu/uacc/8cards.htm)

Grievances

According to University Policies, if you have a problem with this class, you should seek to resolve the grievance concerning a grade or academic practice by speaking first with the instructor or professor. Then, if necessary, take your case to the department chairperson, college dean or associate dean, and to the provost, in that order. Specific procedures are outlined in Faculty Rule 3335-7-23. Grievances against graduate, research, and teaching assistants should be submitted first to the supervising instructor, then to the chairperson of the assistant's department. Contacts for The School of Environment and Natural Resources can be found here: https://senr.osu.edu/our-people

Copyright disclaimer

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course. Under The Ohio State University's Intellectual Property Policy, faculty retain copyright in their creative and scholarly works. Students also hold the copyright in their own creative and scholarly works. The requirement to provide a copy of a paper or project created as an assignment for class does not mean that the student has surrendered their copyright.

For more information see: https://library.osu.edu/copyright/basics

Academic support services

The Ohio State University offers a variety of free services to aid students in their academic success. Below I have listed several that may be of use in this course. Additional academic support may be available through individual academic departments. Please consult your academic advisor or your program's website for more information.

- **Walter E. Dennis Learning Center** - provides academic workshops and courses designed to help students be more successful in their academics. Learning Specialists are available to meet with students individually to discuss topics like time management, study skills, test anxiety, etc.
- **Younkin Success Center** - houses a variety of services and resources for students including a computer lab and 24-hour study space during finals week. Also offered are tutoring, academic services, career services, and wellness services.
- **Center for the Study and Teaching of Writing** - assists students in writing research papers, lab reports, resumes, etc.
- **University Libraries** - provides over 20 libraries on campus, online resources, nationwide databases, etc.

Counseling and Consultation Services/Mental Health

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life Counseling and Consultation Services (CCS) by visiting ccs.osu.edu or calling (614) 292- 5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on-call counselor when CCS is closed at (614) 292-5766 and 24 hour emergency help is also available through the 24/7 National Suicide Prevention Hotline at 1-(800)-273-TALK or at suicidepreventionlifeline.org

David Wirt, wirt.9@osu.edu, is the CFAES embedded mental health counselor. He is available for new consultations and to establish routine care. To schedule with David, please call 614-292-5766. Students should mention their affiliation with CFAES when setting up a phone screening.

Creating an Environment Free from Harassment, Discrimination, and Sexual Misconduct

The Ohio State University is committed to building and maintaining a community to reflect diversity and to improve opportunities for all. All Buckeyes have the right to be free from harassment, discrimination, and sexual misconduct. Ohio State does not discriminate on the basis of age, ancestry, color, disability, ethnicity, gender, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, pregnancy (childbirth, false pregnancy, termination of pregnancy, or recovery therefrom), race, religion, sex, sexual orientation, or protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment. Members of the university community also have the right to be free from all forms of sexual misconduct: sexual harassment, sexual assault, relationship violence, stalking, and sexual exploitation.

To report harassment, discrimination, sexual misconduct, or retaliation and/or seek confidential and non-confidential resources and supportive measures, contact the Office of Institutional Equity:

- Online reporting form at **equity.osu.edu**,
- Call 614-247-5838 or TTY 614-688-8605,
- Or Email **equity@osu.edu**

The university is committed to stopping sexual misconduct, preventing its recurrence, eliminating any hostile environment, and remedying its discriminatory effects. All university employees have reporting responsibilities to the Office of Institutional Equity to ensure the university can take appropriate action:

- All university employees, except those exempted by legal privilege of confidentiality or expressly identified as a confidential reporter, have an obligation to report incidents of sexual assault immediately.
- The following employees have an obligation to report all other forms of sexual misconduct as soon as practicable but at most within five workdays of becoming aware of such information: 1. Any human resource professional (HRP); 2. Anyone who supervises faculty, staff, students, or volunteers; 3. Chair/director; and 4. Faculty member."

Diversity Statement

The Ohio State University affirms the importance and value of diversity of people and ideas. We believe in creating equitable research opportunities for all students and to providing programs and curricula that allow our students to understand critical societal challenges from diverse perspectives and aspire to use research to promote sustainable solutions for all. We are committed to maintaining an inclusive community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among all members; and encourages each individual to strive to reach their own potential. The Ohio State University does not discriminate on the basis of age, ancestry, color, disability, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, race, religion, sex, gender, sexual orientation, pregnancy, protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment.

To learn more about diversity, equity, and inclusion and for opportunities to get involved, please visit:

- https://odi.osu.edu/
- https://odi.osu.edu/racial-justice-resources
- https://odi.osu.edu/focus-on-racial-justice
- http://mcc.osu.edu/

In addition, this course adheres to **The Principles of Community** adopted by the College of Food, Agricultural, and Environmental Sciences. These principles are located on the Carmen site for this course; and can also be found at https://go.osu.edu/principlesofcommunity. For additional information on Diversity, Equity, and Inclusion in CFAES, contact the CFAES Office for Diversity, Equity, and Inclusion (https://equityandinclusion.cfaes.ohio-state.edu/). If you have been a victim of or a witness to a bias incident, you can report it online and anonymously (if you choose) at https://equity.osu.edu/.

ACCESSIBILITY ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Requesting accommodations

The university strives to make all learning experiences as accessible as possible. Considering the current pandemic, students seeking to

request COVID-related accommodations may do so through the university's request process, managed by Student Life Disability Services. If you anticipate or experience academic barriers based on your disability (including mental health, chronic, or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

Several accessibility accommodations are already built into our course for all students (see list below). We work to provide these accommodations to all students and want to make sure all students have a positive learning experience in our course. Please send documentation from SLDS to the instructor in order to establish any further accommodations needed during the semester.

1. **Extended Time (1.5x or 2x) Assignments: SLDS-REGISTERED STUDENTS SHOULD EMAIL THEIR PLAN**. A student must send their completed SLDS paperwork to the instructor. Once accommodations are verified, we will setup all assessments accordingly.
2. **Lecture/Lab slides: PROVIDED TO ALL STUDENTS.** We provide all lecture and lab presentation slides via Carmen.
3. **Distraction Reduced Testing Space, Small Group Setting: PROVIDED TO ALL STUDENTS.** Students can take all assessments on Carmen from anywhere. Students who are registered with Office of Student Life Disability Services (SLDS) and require distraction reduced testing space should make their own accommodations.
4. **Closed-captioning and transcripts: PROVIDED TO ALL STUDENTS.** All required multimedia (e.g., videos, podcasts) are accompanied with closed captioning or transcripts that meet ADA requirements. Most times these features are provided by the content producer (e.g., The New York Times, PBS, NPR, Nature, National Geographic). However, you may find select transcripts produced by the course team and linked in Carmen.
5. **Flexible due dates for assignments: PROVIDED TO ALL STUDENTS.** All quizzes, discussion boards, reflections and exams are open on Carmen for a period of 7 days and the carbon balance project is open on Carmen for a period of 21 days to accommodate students' busy schedules. Students can complete these assignments anytime while the window is open. Extenuating circumstances sometimes occur. Students who miss a due date for a legitimate

reason (e.g., emergency, hospital visit, extended illness, unforeseen health issue, homelessness) should contact the instructor before the due date by email to request additional time.

LECTURE SCHEDULE

Week	Topics, Readings, Assignments, Deadlines
1	**Introduction to Soil Science Lectures:** • Syllabus • Soil Definition: what is soil? • Soil Within Earth's Critical Zone • Soil Ecosystem Services: why is soil important? • Soil as a Fragile Resource • Soil functions **Introduction to Soil Science Reading:** • Soils, Chapter 1 **Assignment:** • Discussion Board 1 (Introduction) • Syllabus Quiz
2	**Soil Composition Lectures:** • Mineral Components • Soil Color • Soil Texture • Soil Organic Matter • Soil Aggregation & Structure **Soil Composition Reading:** • Chapter 2 **Assignment:** • Reflection #1 • Exit slip #1
3	**Soil Pore and Solution Properties Lectures:** • Soil Pores & Their Sizes • Soil Wetness & Air-Filled Porosity • The Soil Solution & pH **Soil Pores & Solution Properties Reading:**

Week	Topics, Readings, Assignments, Deadlines
	• Soils, Chapter 3, Carmen Reading **Assignment:** • Discussion Board 2
4	**Soil Organisms Lectures:** • The Variety of Organisms in Soil • Soil Organism Biomass • Soil Microbial Ecology • Symbiotic Relationships **Soil Organisms Reading:** • Soils, Chapter 4, Carmen Reading • Watch documentary: Living Soil **Assignment:** • Exit Slip 2
5	**Soil & the Geologic Cycle Lectures:** • Rock & Mineral Weathering • Soil Parent Materials • Soil Horizons, the Evidence of Soil Formation • Soil Formation Processes & Mechanisms • Factors Influencing Soil Formation **Soil & the Geologic Cycle Reading:** • Soils, Chapter 5, Carmen Reading **Assignment:** • Discussion Board 3
6	**Soil & the Hydrologic Cycle Lectures:** • Fates of Water in Soil • Water Balance in Soils • Water Retention & Hydraulic Conductivity • The Dynamics of Water Flow in Soil **Soil & the Hydrologic Cycle Reading:** • Soils, Chapter 6, Carmen Reading **Assignment:**

Week	Topics, Readings, Assignments, Deadlines
	• Exit slip #3
7	**Soil & Earth's Thermal Energy Cycles Lectures:** • The Dynamics of Soil Temperature – Seasonal & Diurnal • Processes of Heat Flow in Soil • Soil Thermal Conductivity • Soil Heat Capacity **Soil & Earth's Thermal Energy Cycle Reading:** • Soils, Chapter 7, Carmen Reading **Assignment:** • Midterm
8	**Soil & the Carbon Cycle Lectures:** • The Local Carbon Cycle & the Soil Food Web • The Dynamics of C Substrate Decomposition • Factors Influencing the Flow of Carbon in Soil • Organic Carbon Distributions Within and Between Soil **Soil & the Carbon Cycle Readings:** • Soils, Chapter 8, Carmen Reading **Assignment:** • Discussion Board 4
9	**Soil & the Oxygen Cycle Lecture:** • The Sinks of Oxygen in Soil • Soil Aeration • Factors Influencing O_2 Levels in Soil • Soil Oxidation-Reduction (Redox) Potential **Soil & the Oxygen Cycle Readings:** • Soils, Chapter 9, Carmen Reading **Assignment:** • Carbon Balance Activity accessible • Discussion Board 5

Week	Topics, Readings, Assignments, Deadlines
10	**Spring Break**
11	**Soil & K, Mg and Ca Cycling Lectures:** • Introduction to Nutrient Cycling in Soils • Cation Exchange and CEC • The K Cycle • The Ca & Mg Cycles • Cation Exchange Capacity and Base Saturation • Introduction to Soil Fertility **Soil & K, Mg and Ca Cycling Readings:** • Soils, Chapter 10, Carmen Reading **Assignment:** • Discussion Board 6
12	**Soil & the Nitrogen Cycle Lectures:** • Nitrogen Input into Soils • Nitrogen Transformations in Soil • Nitrogen Losses from Soil • Concepts of Nitrogen Rate Guidelines for Corn • Nitrogen Management & Hypoxia in the Gulf of Mexico **Soil & the Nitrogen Cycle Readings:** • Soils, Chapter 11, Carmen Reading **Assignment:** • Discussion Board 7
13	**Soil & the Phosphorus Cycle Lectures:** • Phosphorus Input into Soils • Phosphorus Interaction with Soil Organic Matter • Phosphorus Interaction with Soil Minerals • Phosphorus Fixation in Soils • Phosphorus Management & Water Quality • Cultural Methods to Protect Waters from P Pollution **Soil & the Phosphorus Cycle Readings:** • Soils, Chapter 12, Carmen Reading

Week	Topics, Readings, Assignments, Deadlines
	Assignment: • Carbon Balance Report due
14	**Soil & the Sulfur Cycle Lectures:** • Sulfur Input into Soils • Forms of Sulfur Found in Soil • Sulfur Transformations in Soil • Sulfate Adsorption & Exchange • Sulfur & Acid Deposition **Soil & the Sulfur Cycle Readings:** • Soils, Chapter 13, Carmen Reading **Assignment:** • Exit Slip 4
15	**US Soil Taxonomy and the Soil Orders Lectures:** • US Soil Taxonomy: Diagnostic Horizons • US Soil Taxonomy: Soil Moisture & Temperature Regimes • US Soil Taxonomy: The Soil Orders **US Soil Taxonomy and the Soil Orders Readings:** • Soils, Chapter 14, Carmen Reading **Assignment:** • Carbon Balance Quiz
Final Exam Week	**Final Exam**

THE OHIO STATE UNIVERSITY

SYLLABUS
ENR 3000

Soil Science Lecture
GE Foundations, Natural Science: 3 credits
AU 2022: In-person Sections

COURSE OVERVIEW

ENR 3000 fulfills 3-credits of the General Education (GE) Category Foundations: Natural Science. It is intended to be taken with the 1-credit GE Foundations: Natural Science laboratory titled “Soil Science Laboratory” (ENR 3000). When taken together (ENR 3000 + ENR 3001) will fulfill 4 credits of the GE Foundations, Natural Science category. Introduction to Soil Science Laboratory (ENR 3001) is a 1-credit traditional laboratory course that compliments the Introduction to Soil Science Lecture (ENR 3000).

ENR 3000 will be offered all semesters as an in-person section that will be taught as a synchronous class that meets 2 times each week of the semester for 1 hour and 20 minutes in a classroom on the campus of Ohio State.

ENR 3000 will utilize multiple online platforms supported by Ohio State. All content, including lectures, slides, demonstrations, presentations, notes, videos, readings will be delivered through Carmen (https://carmen.osu.edu) or Ohio State Libraries (https://library.osu.edu/). Students will have free access to all course content for the entire semester.

A free open-textbook, free readings (e.g., journal articles, newspaper articles) and free documentaries will be provided through Carmen, Ohio State PressBooks, Ohio State Libraries, YouTube, academic institutions, professional organizations, and governmental agencies.

Instructor

Instructor: Dr. Tania Burgos Hernández, PhD

Email: burgos-hernandez.1@osu.edu

Office location: Kottman Hall 410 B

Phone: 614-292-2265 (SENR Front Desk)

Office Hours: Times posted on Carmen, can meet in-person or by Zoom

Preferred means of communication:

- My preferred method of communication for questions is **email.**
- My class-wide communications will be sent through the Announcements tool in CarmenCanvas. Please check your notification preferences (go.osu.edu/canvas-notifications) to be sure you receive these messages.

Course Prerequisites

None.

Understanding soils requires a working knowledge of the principles and vocabulary of the sciences, including elementary chemistry. Students attempting to take this course without having received credit for college-level, Introductory Chemistry should be aware that this level of understanding is assumed, and little time will be available to review basic chemistry concepts.

Course description

Introduction to soil physical, chemical, and biological properties related to land use, environmental quality, and crop production.

This course offers a multi-disciplinary overview of soil science where the central premise is that soils occur at the heart of Earth's Critical Zone and substantially interact with bedrock, water, terrestrial organisms, and the near-earth atmosphere. This interaction occurs by way of Earth's Cycles, the circulation of water, carbon, energy, oxygen, nitrogen, phosphorus, and other elements through the Critical Zone components. Thus, we will introduce the students to soil physical, chemical, and biological properties related to land use, environmental quality, and crop production. The magnitudes of various soil properties influence the rates and extent of these circulations. The influence of soil properties on Earth's Cycles is a major focus of the course and is the first step for proper use of the soil resource.

Expected learning outcomes

Course Learning Outcomes

By the end of this course, students will:

- Understand basic concepts and vocabulary of soil science including the physical, chemical and biological properties of soils and their interactions with other components of forest, wetland, agricultural, and grassland ecosystems.
- Gain knowledge about how soil properties and behavior will help shape decisions regarding appropriate use and management of the valuable soil resource.
- Understand how soils are formed and classified.

- Gain knowledge about important soil processes and their influence on soil behavior.
- Understand the role of soils in a variety of terrestrial ecosystems.
- Develop an appreciation for the world soil resource base and the importance of its conservation.

General Education Goals & Expected Learning Outcomes

This course fulfills the General Education (GE) rationale for the Foundations, Natural Science category. ENR 3000 fulfills Specific Goals 1 and 2 Natural Science and Expected Learning Outcome 1.1, 1.2, 2.1, 2.2, and 2.3.

When this 3-credit ENR 3000 lecture is taken in combination with the 1-credit ENR 3001 laboratory, together these 4-credits (i.e., 1-credit laboratory + 3-credit lecture) fulfills ALL Goals (i.e., Goals 1 and 2) and ALL Expected Learning Outcomes (i.e., ELOs 1.1, 1.2, 1.3, 2.1, 2.2, 2.3) for the Foundations, Natural Science GE category.

ENR 3000 FULFILLS

GOAL 1: Successful students will engage in the theoretical and empirical study within the natural sciences, gaining an appreciation of the modern principles, theories, methods, and modes of inquiry used generally across the natural sciences.

Expected Learning Outcome 1.1: Successful students are able to explain basic facts, principles, theories, and methods of modern natural sciences; describe and analyze the process of scientific inquiry.

Expected Learning Outcome 1.2: Successful students are able to identify how key events in the development of science contribute to the ongoing and changing nature of scientific knowledge and methods.

GOAL 2: Successful students will discern the relationship between the theoretical and applied sciences while appreciating the implications of scientific discoveries and the potential impacts of science and technology.

Expected Learning Outcome 2.1: Successful students are able to analyze the inter-dependence and potential impacts of scientific and technological developments.

Expected Learning Outcome 2.2: Successful students are able to evaluate the social and ethical implications of natural scientific discoveries.

Expected Learning Outcome 2.3: Successful students are able to critically evaluate and responsibly use information from the natural sciences.

ENR 3000 and ENR 3001 will promote an understanding of principles, theories, and methods of modern soil science, relationships between science and technology, the implications of scientific

discoveries and the potential of science and technology to address problems of the contemporary world, particularly environmental issues, food security, and human health. Students will learn that soil science is an interdisciplinary field of study, which combines practices, theories and methods from the biological sciences, physical sciences and geological sciences. Students will develop an understanding for the pivotal role that soils play in sustaining life on Earth and how nearly all living organisms rely on ecosystem services provided by soils. This course addresses and assesses these learning outcomes through discussion, reflections, experiential learning, and exams.

HOW THIS COURSE WORKS

Mode of delivery: This course is an in-person course.

Pace of activities: This course is divided into **weekly modules**. Students are expected to keep pace with weekly deadlines but may schedule their efforts freely within that time frame.

Credit hours and work expectations: This is a 3 credit-hour course. According to Ohio State bylaws on instruction (go.osu.edu/credithours), students should expect around 3 hours per week of time spent on direct instruction in addition to 6 hours of homework (reading and assignment preparation, for example) to receive a grade of C average.

Attendance and participation requirements: Attendance is based on your in-person class activity. You are expected to log in to the course in Carmen every week. During most weeks you will probably log in many times. Students who are enrolled in the in-person section of ENR 3000 are expected to attend in-person lectures each week. In case of emergency or illness, please contact the instructor as soon as possible.

COURSE MATERIALS AND TECHNOLOGIES

Textbook

- There is no formal textbook for this course. Instead, materials will be posted to Carmen (https://carmen.osu.edu) including PowerPoint Slides of the lectures and corresponding Reading Materials for each chapter. These items can be made available in alternate formats upon request.

RECOMMENDED/OPTIONAL

- *Elements of the Nature and Properties of Soils*, by Ray R. Weil and Nyle C. Brady, Fourth Edition, 2019, Pearson. (Previous editions are fine) **or** another suitable soils textbook; including *The Nature and Properties of Soils* by Brady, Nyle and Ray R Weil, Pearson.

- Select chapters from: *Collapse: How Societies Choose to Fail or Succeed: Revised Edition*. 2010. J. Diamond. Penguin Books. ISBN-10: 0143117009, ISBN-13: 978-0143117001. Chapter 9: One Island, Two Peoples, Two Histories: The Dominican Republic and Haiti.
- Lindbo, D., Havlin, J., Kozlowski, D., & Robinson, C. (2012). *Know soil, know life*. Soil Science Society of America.
- Other required reading in the form of news articles and easy to understand journal articles.

Course technology

For help with your password, university email, Carmen, or any other technology issues, questions, or requests, contact the OSU IT Service Desk. Standard support hours are available at https://ocio.osu.edu/help, and support for urgent issues is available 24/7.

- **Self-Service and Chat support:** http://ocio.osu.edu/selfservice
- **Phone:** 614-688-HELP (4357)
- **Email:** 8help@osu.edu
- **TDD:** 614-688-8743

BASELINE TECHNICAL SKILLS FOR ONLINE COURSES

- Basic computer and web-browsing skills
- Basic skills with Microsoft Word, Excel and PowerPoint
- Navigating Carmen: for questions about specific functionality, see the Canvas Student Guide.

REQUIRED EQUIPMENT

- Computer: current Mac (OS X) or PC (Windows 7+) with high-speed internet connection
- Other: a mobile device (smartphone or tablet) or landline to use for BuckeyePass authentication

REQUIRED SOFTWARE

- Microsoft Office 365: All Ohio State students are now eligible for free Microsoft Office 365 ProPlus through Microsoft's Student Advantage program. Full instructions for downloading and installation can be found at go.osu.edu/office365help.

CARMEN ACCESS

You will need to use BuckeyePass multi-factor authentication to access your courses in Carmen. To ensure that you are able to connect to Carmen at all times, it is recommended that you take the following steps:

- Register multiple devices in case something happens to your primary device. Visit the BuckeyePass - Adding a Device help article for step-by-step instructions.
- Request passcodes to keep as a backup authentication option. When you see the Duo login screen on your computer, click “Enter a Passcode” and then click the “Text me new codes” button that appears. This will text you ten passcodes good for 365 days that can each be used once.
- Download the Duo Mobile application to all of your registered devices for the ability to generate one-time codes in the event that you lose cell, data, or Wi-Fi service.

If none of these options will meet the needs of your situation, you can contact the IT Service Desk at 614-688-4357 (HELP) and the IT support staff will work out a solution with you.

VIDEOS – LINKS AVAILABLE ON CARMEN

- Living Soil.2018. Soil Health Institute
- Topical videos used in the class: available on YouTube

GRADING AND FACULTY RESPONSE

How your grade is calculated

The student will be evaluated based on his/her performance on the following assignments. The breakdown for evaluation is:

ASSIGNMENT CATEGORY	PERCENTAGE OF GRADE
Syllabus Quiz (10 points)	2%
Reflection (20 points)	10%
Experiential Learning (20 points)	10%
Exit Slips (4) (10 points each)	20%
Discussion Boards (4) (10 points each)	20%
Midterm	18%
Final Exam	20%
Total	**100%**

**See course schedule for due dates. Everything is due by 11:59PM on Tuesdays.*

A. Syllabus Quiz: (2%) Students will complete one (1) syllabus quiz that will be administered on Carmen. The quiz will open Tuesday at 12:01 pm and will close the following Tuesday at 11:59 pm of the first week of classes. (See schedule for date)

B. Reflection: (10%) In this activity students are expected to write a reflection answering a series of questions provided by the instructor. The reflection will be 2 pages in length, double spaced, font: times new roman, size 12 and will be submitted through Carmen. Readings, data sets, documentaries that are required for writing assignments will all be free and provided through Carmen or links to these materials will be provided on Carmen. The questions will be provided with at least 1 one week before the due date. This assignment is open-book, however, a student must complete the work on their own without help from peers. The reflection is due on a Tuesday at 11:59 pm (see schedule for due date).

ENR 3000 - Objectives of reflection:

1. Understand how soils are involved in what is currently happening to our natural resources, environment, climate, and/or food supplies.
2. Gain experience making informed decisions and developing potential solutions to environmental issues.
3. Gain an appreciation for the importance of soil science
4. Develop an understanding of how soil science has a direct impact on our daily lives

C. Experiential Learning (The Carbon Balance Activity): (10%) This activity consists of calculating soil organic matter for soils under different conditions in Ohio and reflecting on the importance of soil carbon. The activity will consist of two parts. In the first part, you will be using the OSU soil organic matter calculator (we will be uploading everything you need on Carmen) to predict the soil organic matter in a field. To complete these calculations, you will be provided with different scenarios that include different cropping patterns, cover crops, erosion, and manure application. Along with the calculation, you will submit one paragraph. As you will learn in this class, soil carbon is important for many biological functions. Using the results obtained from the organic matter calculations and the information learned in class you will answer the question: why is soil organic carbon important? The information should be concise but informational. The second part consists of a short multiple-choice and T or F quiz.

You will be given 3 weeks to complete this activity. Late submissions will not be accepted. More details on this activity will be discussed during the course and further instructions will be posted to Carmen.

ENR 3000 - Objectives of experiential activity:

1. Understand how different scenarios could change the soil organic matter content.
2. Gain experience using the soil organic matter calculator.
3. Develop skills in how to effectively present data using figures (graphs)
4. Make informed soil management decisions based on scientific data.

Exit slips: (20%) Exit slips will be given four (4) times during the semester (dates are posted on the schedule). These will consist of short answer questions from the material given during the class of the same week the exit slip is administered. They are open book/notes. There is no make-up exit slip. If you miss an exit slip you will get an automatic 0. The instructor will post the questions on a Tuesday at 12:01 pm of the respective week and they will be open until the next Tuesday at 11:59 pm. See schedule for dates.

ENR 3000 - Objectives of exit slips:

1. Evaluate student learning at the end of multiple weeks during the semester.
2. Assess student's understanding of key concepts principles, theories, and methods.
3. Critically evaluate and use information from the soil sciences.
4. Develop skills in how to effectively present data using figures (graphs)
5. Make informed soil management decisions based on scientific data.

Discussion Boards: (20%) For the Discussion Boards, the instructor will post questions related to the topics covered in class to date. You are to address the question and provide relevant supporting information. It is also required that you reply to one post from a classmate.
This assignment will open on Tuesdays at 12:01 pm. This assignment will be due the following Tuesday at 11:59 pm. See the Course Schedule for the due dates of the Discussion Boards. Your discussion posts, should be your own original work. You are encouraged to ask a trusted person to proofread your assignments before you turn them in--but no one else should revise or rewrite your work.

ENR 3000 - Objectives of discussion boards:

1. Critically evaluate the use of information from the natural sciences with an emphasis in soil science.
2. Analyze data from graphs and peer review articles.
3. Apply the information learned in class to real-world scenarios.
4. Identify reliable sources of information and use them to discuss soil science-related topics.

Midterm Exam: (18%) The midterm exam will be administered approximately halfway through the semester. It will be open book and open notes and will be on lecture material covered up to the midterm date. Late submissions will not be accepted and will result in a grade of 0%. Missed exams will result in a grade of 0%. All exams must be taken on Carmen. The exam is open-book, however, students must complete the work on their own without help from peers. The exam will be open for a week and once you open it you will have 80 minutes to complete it.

Final Exam: (20%) A semi-comprehensive (all material covered but with an emphasis on material since the midterm exam) final exam will be administered during the scheduled final exam week. It will be

open book and open notes and consist of multiple-choice or true/false questions covering selected material presented in the course lectures and readings. There will be a strictly enforced 60-minute time limit for taking the final exam. Late submissions will not be accepted. A study guide will be posted on Carmen to provide guidance in studying for the final exam. The final exam will be accessible for 60 hours as indicated on the Course Schedule table. The exam is open-book, however, students must complete the work on their own without help from peers.

ENR 3000 - Objectives of exams (midterm and final):

1. Evaluate student learning in the middle and at the end of the semester.
2. Assess reading comprehension, problem-solving skills, critical thinking and vocabulary usage.
3. Assess understanding of key concepts principles, theories, and methods

Late policy

Late submissions will not be accepted except in the case of emergency or illness. Please refer to Carmen for due dates.

Extenuating circumstances sometimes occur. Students who miss an assignment or exam due to a legitimate reason (e.g., emergency, hospital visit, extended illness) should contact their instructor to request permission to make-up an assignment. The instructor will determine if an excuse is acceptable. If approved, the student must make up the missed assignment within a time frame specified by the instructor. Since this course has assignments open for a period of days to weeks on Carmen, acceptable excuses typically entail lengthy illness, extended hospitalization or other serious issues with official documentation.

The due date for each assignment is provided on Carmen on the very first day of the semester to help students plan their semester. It is the responsibility of the student to know the due date for all assignments. We do this to accommodate students' busy schedules. Students are expected to plan their semester accordingly. Technical glitches such as a bad internet connection, faulty internet browser, a computer that “crashes”, a battery that runs out of power, an obnoxious roommate, software malfunction, a flat tire, etc. are not acceptable excuses for missing a deadline. The instructor does not accept assignments by e-mail, and these will be deleted and not graded. Assignments should always be completed and/or submitted using Carmen.

Grading scale

Letter Grade	%	Mastery
A	93.00–100.0	Demonstrates complete mastery of all learning outcomes as demonstrated on assessments.
A-	90.00–92.99	
B+	87.00–89.99	Demonstrates mastery of at least two learning outcomes as demonstrated on assessments.
B	83.00–86.99	
B-	80.00–82.99	
C+	77.00–79.99	Demonstrates mastery of at least one learning outcome as demonstrated on assessments.
C	73.00–76.99	
C-	70.00–72.99	
D+	67.00–69.99	Fails to meet mastery of any learning outcome such that student will not be successful in higher-level course; did not complete assessments; demonstrated lack of engagement, did not complete assessment in a timely fashion.
D	60.00–66.99	
E	00.00–59.99	

Also, no matter how close your score is to the cutoff there will be no rounding up of scores.

Instructor feedback and response time

- **Grading and feedback:** Multiple-choice quizzes and exams will be graded immediately, and students will know their grade immediately after they submit a quiz or exam. For written assignments, these will be graded by hand, and you can expect a grade and feedback within **7 days**.
- **Email:** Instructor check and reply to emails daily. Please use your OSU email account to send emails.
- **Class announcements:** All important class-wide messages will be sent through the Announcements tool in CarmenCanvas. Please check your notification preferences (go.osu.edu/canvas-notifications) to ensure you receive these messages.
- **Discussion board:** I will check and reply to messages in the discussion boards once mid-week and once at the end of the week.

Communication Guidelines

The following are my expectations for how we should communicate as a class. Above all, please remember to be respectful and thoughtful.

- **Writing style:** While there is no need to participate in class discussions as if you were writing a research paper, you should remember to write using good grammar, spelling, and punctuation. A more conversational tone is fine for non-academic topics. Beware not all students perceive color in the same way. When you use color also use **Bold**, *Italicize* or Underline as emphasis. A good practice is to use the Accessibility Checker in all Microsoft Office 365 products available to all students.
- **Tone and civility**: Let's maintain a supportive learning community where everyone feels safe and where people can disagree amicably. Remember that sarcasm doesn't always come across online. I will provide specific guidance for discussions on controversial or personal topics.
- **Citing your sources**: When we have academic discussions, please cite your sources to back up what you say. For the textbook or other course materials, list at least the title and page numbers. For online sources, include a link.
- **Backing up your work**: Consider composing your academic posts in a word processor, where you can save your work, and then copying into the Carmen discussion.

OTHER COURSE POLICIES

Academic integrity policy

POLICIES FOR THIS ONLINE COURSE

- **Quizzes and exams**: All quizzes and exams are open book. You can use notes, lecture slides, videos, documentaries, the Internet, Google, calculators, books, articles. However, you must complete the midterm and final exams yourself, without any external help or communication. You cannot use a group message App during the exam. You cannot share questions and answers.
- **Written assignments**: Your written assignments, including discussion posts, should be your own original work. In formal assignments, you should follow the APA style to cite the ideas and words of your research sources. You are encouraged to ask a trusted person to proofread your assignments before you turn them in--but no one else should revise or rewrite your work.
- **Reusing past work**: In general, you are prohibited in university courses from turning in work from a past class to your current class, even if you modify it. If you want to build on past research or revisit a topic you've explored in previous courses, please discuss the situation with your instructor.
- **Collaboration and informal peer-review**: The course includes many opportunities for formal collaboration with your classmates. While study groups and peer-review of major written

projects is encouraged, remember that comparing answers on a quiz or assignment is not permitted. If you're unsure about a particular situation, please feel free just to ask ahead of time.

OHIO STATE'S ACADEMIC INTEGRITY POLICY

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the University's *Code of Student Conduct*, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the University's *Code of Student Conduct* and this syllabus may constitute "Academic Misconduct."

The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the University or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the University's *Code of Student Conduct* is never considered an excuse for academic misconduct, so I recommend that you review the *Code of Student Conduct* and, specifically, the sections dealing with academic misconduct.

If I suspect that a student has committed academic misconduct in this course, I am obligated by University Rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the University's *Code of Student Conduct* (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

Other sources of information on academic misconduct (integrity) to which you can refer include:

- The Committee on Academic Misconduct web pages (COAM Home)
- *Ten Suggestions for Preserving Academic Integrity (Ten Suggestions)*
- *Eight Cardinal Rules of Academic Integrity* (www.northwestern.edu/uacc/8cards.htm)

Grievances

According to University Policies, if you have a problem with this class, you should seek to resolve the grievance concerning a grade or academic practice by speaking first with the instructor or professor. Then, if necessary, take your case to the department chairperson, college dean or associate dean, and to the provost, in that order. Specific procedures are outlined in Faculty Rule 3335-7-23. Grievances against graduate, research, and teaching assistants should be submitted first to the supervising

instructor, then to the chairperson of the assistant's department. Contacts for The School of Environment and Natural Resources can be found here: https://senr.osu.edu/our-people

Copyright disclaimer

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course. Under The Ohio State University's Intellectual Property Policy, faculty retain copyright in their creative and scholarly works. Students also hold the copyright in their own creative and scholarly works. The requirement to provide a copy of a paper or project created as an assignment for class does not mean that the student has surrendered their copyright.

For more information see: https://library.osu.edu/copyright/basics

Academic support services

The Ohio State University offers a variety of free services to aid students in their academic success. Below I have listed several that may be of use in this course. Additional academic support may be available through individual academic departments. Please consult your academic advisor or your program's website for more information.

- **Walter E. Dennis Learning Center** - provides academic workshops and courses designed to help students be more successful in their academics. Learning Specialists are available to meet with students individually to discuss topics like time management, study skills, test anxiety, etc.
- **Younkin Success Center** - houses a variety of services and resources for students including a computer lab and 24-hour study space during finals week. Also offered are tutoring, academic services, career services, and wellness services.
- **Center for the Study and Teaching of Writing** - assists students in writing research papers, lab reports, resumes, etc.
- **University Libraries** - provides over 20 libraries on campus, online resources, nationwide databases, etc.

Counseling and Consultation Services/Mental Health

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life Counseling and Consultation Services (CCS) by visiting ccs.osu.edu or calling

(614) 292- 5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on-call counselor when CCS is closed at (614) 292-5766 and 24 hour emergency help is also available through the 24/7 National Suicide Prevention Hotline at 1-(800)-273-TALK or at suicidepreventionlifeline.org

David Wirt, wirt.9@osu.edu, is the CFAES embedded mental health counselor. He is available for new consultations and to establish routine care. To schedule with David, please call 614-292-5766. Students should mention their affiliation with CFAES when setting up a phone screening.

Creating an Environment Free from Harassment, Discrimination, and Sexual Misconduct

The Ohio State University is committed to building and maintaining a community to reflect diversity and to improve opportunities for all. All Buckeyes have the right to be free from harassment, discrimination, and sexual misconduct. Ohio State does not discriminate on the basis of age, ancestry, color, disability, ethnicity, gender, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, pregnancy (childbirth, false pregnancy, termination of pregnancy, or recovery therefrom), race, religion, sex, sexual orientation, or protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment. Members of the university community also have the right to be free from all forms of sexual misconduct: sexual harassment, sexual assault, relationship violence, stalking, and sexual exploitation.

To report harassment, discrimination, sexual misconduct, or retaliation and/or seek confidential and non-confidential resources and supportive measures, contact the Office of Institutional Equity:

- Online reporting form at **equity.osu.edu**,
- Call 614-247-5838 or TTY 614-688-8605,
- Or Email **equity@osu.edu**

The university is committed to stopping sexual misconduct, preventing its recurrence, eliminating any hostile environment, and remedying its discriminatory effects. All university employees have reporting responsibilities to the Office of Institutional Equity to ensure the university can take appropriate action:

- All university employees, except those exempted by legal privilege of confidentiality or expressly identified as a confidential reporter, have an obligation to report incidents of sexual assault immediately.
- The following employees have an obligation to report all other forms of sexual misconduct as soon as practicable but at most within five workdays of becoming aware of such information: 1. Any human resource professional (HRP); 2. Anyone who supervises faculty, staff, students, or volunteers; 3. Chair/director; and 4. Faculty member."

Diversity Statement

The Ohio State University affirms the importance and value of diversity of people and ideas. We believe in creating equitable research opportunities for all students and to providing programs and curricula that allow our students to understand critical societal challenges from diverse perspectives and aspire to use research to promote sustainable solutions for all. We are committed to maintaining an inclusive community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among all members; and encourages each individual to strive to reach their own potential. The Ohio State University does not discriminate on the basis of age, ancestry, color, disability, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, race, religion, sex, gender, sexual orientation, pregnancy, protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment.

To learn more about diversity, equity, and inclusion and for opportunities to get involved, please visit:

- https://odi.osu.edu/
- https://odi.osu.edu/racial-justice-resources
- https://odi.osu.edu/focus-on-racial-justice
- http://mcc.osu.edu/

In addition, this course adheres to **The Principles of Community** adopted by the College of Food, Agricultural, and Environmental Sciences. These principles are located on the Carmen site for this course; and can also be found at https://go.osu.edu/principlesofcommunity. For additional information on Diversity, Equity, and Inclusion in CFAES, contact the CFAES Office for Diversity, Equity, and Inclusion (https://equityandinclusion.cfaes.ohio-state.edu/). If you have been a victim of or a witness to a bias incident, you can report it online and anonymously (if you choose) at https://equity.osu.edu/.

ACCESSIBILITY ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Requesting accommodations

The university strives to make all learning experiences as accessible as possible. Considering the current pandemic, students seeking to request COVID-related accommodations may do so through the university's request process, managed by Student Life Disability Services. If you anticipate or experience academic barriers based on your disability (including mental health, chronic, or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may

request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

Several accessibility accommodations are already built into our course for all students (see list below). We work to provide these accommodations to all students and want to make sure all students have a positive learning experience in our course. Please send documentation from SLDS to the instructor in order to establish any further accommodations needed during the semester.

1. **Extended Time (1.5x or 2x) Assignments: SLDS-REGISTERED STUDENTS SHOULD EMAIL THEIR PLAN**. A student must send their completed SLDS paperwork to the instructor. Once accommodations are verified, we will setup all assessments accordingly.
2. **Lecture/Lab slides: PROVIDED TO ALL STUDENTS.** We provide all lecture and lab presentation slides via Carmen.
3. **Distraction Reduced Testing Space, Small Group Setting: PROVIDED TO ALL STUDENTS.** Students can take all assessments on Carmen from anywhere. Students who are registered with Office of Student Life Disability Services (SLDS) and require distraction reduced testing space should make their own accommodations.
4. **Closed-captioning and transcripts: PROVIDED TO ALL STUDENTS.** All required multimedia (e.g., videos, podcasts) are accompanied with closed captioning or transcripts that meet ADA requirements. Most times these features are provided by the content producer (e.g., The New York Times, PBS, NPR, Nature, National Geographic). However, you may find select transcripts produced by the course team and linked in Carmen.
5. **Flexible due dates for assignments: PROVIDED TO ALL STUDENTS.** All quizzes, discussion boards, reflections and exams are open on Carmen for a period of 7 days and the carbon balance project is open on Carmen for a period of 21 days to accommodate students' busy schedules. Students can complete these assignments anytime while the window is open. Extenuating circumstances sometimes occur. Students who miss a due date for a legitimate reason (e.g., emergency, hospital visit, extended illness, unforeseen health issue, homelessness) should contact the instructor before the due date by email to request additional time.

LECTURE SCHEDULE

Week	Topics, Readings, Assignments, Deadlines
1	**Introduction to Soil Science Lectures:** • Syllabus • Soil Definition: what is soil? • Soil Within Earth's Critical Zone • Soil Ecosystem Services: why is soil important? • Soil as a Fragile Resource • Soil functions **Introduction to Soil Science Reading:** • Soils, Chapter 1 **Assignment:** • Discussion Board 1 (Introduction) • Syllabus Quiz
2	**Soil Composition Lectures:** • Mineral Components • Soil Color • Soil Texture • Soil Organic Matter • Soil Aggregation & Structure **Soil Composition Reading:** • Chapter 2 **Assignment:** • Reflection #1 • Exit slip #1
3	**Soil Pore and Solution Properties Lectures:** • Soil Pores & Their Sizes • Soil Wetness & Air-Filled Porosity • The Soil Solution & pH **Soil Pores & Solution Properties Reading:** • Soils, Chapter 3, Carmen Reading **Assignment:** • Discussion Board 2

Week	Topics, Readings, Assignments, Deadlines
4	**Soil Organisms Lectures:** • The Variety of Organisms in Soil • Soil Organism Biomass • Soil Microbial Ecology • Symbiotic Relationships **Soil Organisms Reading:** • Soils, Chapter 4, Carmen Reading • Watch documentary: Living Soil **Assignment:** • Exit Slip 2
5	**Soil & the Geologic Cycle Lectures:** • Rock & Mineral Weathering • Soil Parent Materials • Soil Horizons, the Evidence of Soil Formation • Soil Formation Processes & Mechanisms • Factors Influencing Soil Formation **Soil & the Geologic Cycle Reading:** • Soils, Chapter 5, Carmen Reading **Assignment:** • Discussion Board 3
6	**Soil & the Hydrologic Cycle Lectures:** • Fates of Water in Soil • Water Balance in Soils • Water Retention & Hydraulic Conductivity • The Dynamics of Water Flow in Soil **Soil & the Hydrologic Cycle Reading:** • Soils, Chapter 6, Carmen Reading **Assignment:** • Exit slip #3
7	**Soil & Earth's Thermal Energy Cycles Lectures:** • The Dynamics of Soil Temperature – Seasonal & Diurnal

Week	Topics, Readings, Assignments, Deadlines
	• Processes of Heat Flow in Soil • Soil Thermal Conductivity • Soil Heat Capacity **Soil & Earth's Thermal Energy Cycle Reading:** • Soils, Chapter 7, Carmen Reading **Assignment:** • Midterm
8	**Soil & the Carbon Cycle Lectures:** • The Local Carbon Cycle & the Soil Food Web • The Dynamics of C Substrate Decomposition • Factors Influencing the Flow of Carbon in Soil • Organic Carbon Distributions Within and Between Soil **Soil & the Carbon Cycle Readings:** • Soils, Chapter 8, Carmen Reading **Assignment:** • Discussion Board 4
9	**Soil & the Oxygen Cycle Lecture:** • The Sinks of Oxygen in Soil • Soil Aeration • Factors Influencing O_2 Levels in Soil • Soil Oxidation-Reduction (Redox) Potential **Soil & the Oxygen Cycle Readings:** • Soils, Chapter 9, Carmen Reading **Assignment:** • Carbon Balance Activity accessible • Discussion Board 5
10	**Spring Break**
11	**Soil & K, Mg and Ca Cycling Lectures:** • Introduction to Nutrient Cycling in Soils • Cation Exchange and CEC

Week	Topics, Readings, Assignments, Deadlines
	• The K Cycle • The Ca & Mg Cycles • Cation Exchange Capacity and Base Saturation • Introduction to Soil Fertility **Soil & K, Mg and Ca Cycling Readings:** • Soils, Chapter 10, Carmen Reading **Assignment:** • Discussion Board 6
12	**Soil & the Nitrogen Cycle Lectures:** • Nitrogen Input into Soils • Nitrogen Transformations in Soil • Nitrogen Losses from Soil • Concepts of Nitrogen Rate Guidelines for Corn • Nitrogen Management & Hypoxia in the Gulf of Mexico **Soil & the Nitrogen Cycle Readings:** • Soils, Chapter 11, Carmen Reading **Assignment:** • Discussion Board 7
13	**Soil & the Phosphorus Cycle Lectures:** • Phosphorus Input into Soils • Phosphorus Interaction with Soil Organic Matter • Phosphorus Interaction with Soil Minerals • Phosphorus Fixation in Soils • Phosphorus Management & Water Quality • Cultural Methods to Protect Waters from P Pollution **Soil & the Phosphorus Cycle Readings:** • Soils, Chapter 12, Carmen Reading **Assignment:** • Carbon Balance Report due
14	**Soil & the Sulfur Cycle Lectures:**

Week	Topics, Readings, Assignments, Deadlines
	• Sulfur Input into Soils • Forms of Sulfur Found in Soil • Sulfur Transformations in Soil • Sulfate Adsorption & Exchange • Sulfur & Acid Deposition **Soil & the Sulfur Cycle Readings:** • Soils, Chapter 13, Carmen Reading **Assignment:** • Exit Slip 4
15	**US Soil Taxonomy and the Soil Orders Lectures:** • US Soil Taxonomy: Diagnostic Horizons • US Soil Taxonomy: Soil Moisture & Temperature Regimes • US Soil Taxonomy: The Soil Orders **US Soil Taxonomy and the Soil Orders Readings:** • Soils, Chapter 14, Carmen Reading **Assignment:** • Carbon Balance Quiz
Final Exam Week	**Final Exam**

Course Subject & Number: ENR 3000/3001

Expected Learning Outcome 2.2: Successful students are able to critically reflect on and share their own experience of observing or engaging in the visual, spatial, literary, or performing arts and design.
Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

GE Rationale: Foundations: Natural Science (4 credits)

Requesting a GE category for a course implies that the course fulfills **all** expected learning outcomes (ELOs) of that GE category. To help the reviewing panel evaluate the appropriateness of your course for the Foundations: Natural Sciences, please answer the following questions for each ELO.

A. Foundations

Please explain in 50-500 words why or how this course is introductory or foundational in the study of Natural Science.

ENR 3000 is taught by the School of Environment and Natural Resources (SENR). When taken together (ENR 3000 + ENR 3001) will fulfill 4 credits of the GE Foundations, Natural Science category. Introduction to Soil Science Laboratory (ENR 3001) is a 1-credit traditional laboratory course that compliments the Introduction to Soil Science Lecture (ENR 3000).

ENR 3000 will fulfill Natural Science Goals 1 and 2, and Expected Learning Outcomes (ELOs) 1.1, 1.2, 2.1, 2.2, and 2.3. ENR 3001 will fulfill Natural Science Goal 1 and ELO 1.3. When the 1-credit ENR 3001 laboratory is taken in combination with the 3-credit ENR 3000 lecture, together these 4-credits (i.e., 1-credit lab + 3-credit lecture) fulfills all Goals (i.e., Goals 1 and 2) and all ELOs (i.e., ELOs 1.1, 1.2, 1.3, 2.1, 2.2, 2.3) for the Foundations, Natural Science GE category.

ENR 3000 and ENR 3001 will promote an understanding of principles, theories, and methods of modern soil science, relationships between science and technology, the implications of scientific discoveries and the potential of science and technology to address problems of the contemporary world, particularly environmental issues, food security, and human health. Students will learn that soil science is an interdisciplinary field of study, which combines practices, theories and methods from the biological sciences, physical sciences and geological sciences. Students will develop an understanding for the pivotal role that soils play in sustaining life on Earth and how nearly all living organisms rely on ecosystem services provided by soils.

ENR 3000 course topics will be divided into 14 learning modules (see list below) and ENR 3001 course topics will be divided into 14 learning modules (see list below). One module will be taught approximately each week of the semester.

ENR 3000: Course materials will be completely free to all students and consist of lecture slides, lecture presentations, lecture transcripts, journal articles, book chapters, documentaries, software, grading rubrics, and data sets. Course materials will be provided to students through Carmen, the Ohio State Libraries, academic, professional or government websites and online open-source textbooks. Course materials have gone through extensive testing and usage to ensure that they meet accessibility guidelines required by the Ohio State Digital Accessibility Policy. Students who receive accommodations through Student Life Disability Services will receive all required accommodations.

ENR 3000 Course modules
1 Introduction to soil science
2 Soil Composition
3 Soil Pores and Solution Properties
4 Soil Organisms
5 Soil & Geologic Cycle
6 Soil & Hydrologic cycles
7 Thermal Energy Cycles
8 Carbon cycle
9 Oxygen cycle
10 K, Mg, and Ca cycles
11 Nitrogen cycle
12 Phosphorus cycle
13 Soil Taxonomy
14 Sulfur cycle

ENR 3001: The 14 modules are delivered as laboratories with hands-on experiential components. Course materials for ENR 3001 will consist of downloadable reading materials, lecture slides, lecture presentations, lecture transcripts, practice quizzes, grading rubrics, and assignments with laboratory data. Course materials will be provided to students through Carmen, academic, professional or government websites and online open-source textbooks.

ENR 3001 Course Modules
1. Soil Parent Materials, Rocks, Minerals, Sediments
2. Legal Description of Land, Ohio Soil Geography, Web Soil Survey
3. Preparing a Land Use Project Report
4. Measurements, Significant Figures, Rounding and Expressing Numbers
5. Dimensional Analysis, Math and Chemistry Review

Course Subject & Number: ENR 3000/3001

B. Specific Goals for Natural Sciences

GOAL 1: Successful students will engage in theoretical and empirical study within the natural sciences, gaining an appreciation of the modern principles, theories, methods, and modes of inquiry used generally across the natural sciences.

Expected Learning Outcome 1.1: Successful students are able to explain basic facts, principles, theories and methods of modern natural sciences; describe and analyze the process of scientific inquiry. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

ELO 1.1 will be fulfilled in ENR 3000 (Lecture)

Midterm Exam: The midterm exam will be administered approximately half-way through the semester. It will be open book and open notes and will be on lecture material covered up to this point on Carmen. Late submissions will not be accepted and will result in a grade of 0%. Missed exams will result in a grade of 0%. All exams must be taken on Carmen.

Example of questions:
In respect to water content, explain why loamy soils are preferred for most agricultural purposes when compared to soils that are very high in clay content, and compared to soils that are very high in sand. What are some practical aspects of soil texture on the typical agricultural uses of that type of soil. Please use terms that were provided in the Soil Hydrology lecture.

Final Exam: A semi-comprehensive final exam will be administered during the scheduled final exam week. It will be open book and open notes and consist of multiple choice or true/false questions covering selected material presented in the course lectures and readings. There will be a strictly enforced 60-minute time limit for taking the final exam. Late submissions will not be accepted. A study guide will be posted on Carmen to provide guidance in studying for the final exam. The final exam will be accessible for 60 hours as indicated on the Course Schedule table. Exam is open-book, however, students must complete the work on their own without help from peers.

ENR 3000:Objective of exams:
1. Assess critical thinking and vocabulary usage
2. Evaluate students understanding of key principles and cycles related to soil science

Expected Learning Outcome 1.2: Successful students are able to identify how key events in the development of science contribute to the ongoing and changing nature of scientific knowledge and methods. Please link this ELO to the course goals and topics and indicate specific activities/assignments through which it will be met. *(50-700 words)*

ELO 1.1 will be fulfilled in ENR 3000 (Lecture)

Exit slips: Exit slips will be given four (4) times during the semester (dates are posted on the schedule). These will consist of short answer questions from the material given during the class of the same week the exit slip is administered. They are open book/ notes. There is no make-up exit slip. If you miss an exit slip you will get an automatic 0. The instructor will post the questions on a Tuesday at 12:01 pm of the respective week and will be open until the next Tuesday at 11:59 pm. See schedule for dates.

ENR 3000- Objectives of exit slips:
1. Evaluate student learning at the end of multiple weeks during the semester.
2. Assess student's understanding of key concepts principles, theories, and methods.
3. Critically evaluate and use information from the soil sciences.
4. Develop skills in how to effectively present data using figures (graphs)
5. Make informed soil management decisions based on scientific data.

Example of questions:
1. Soil Biology
This week we discussed soil organisms and their roles in soils. Form each one of the categories (5) describe 1 role soil organisms perform in the soil:–Microflora–Microfauna–Mesofauna–Macrofauna–Macroflora
2. Soil Composition
Why do we consider clay particles reactive? (We listed 3 reasons in class); How can we change the soil texture of the soil?

Discussion Boards: For the Discussion Boards, the instructor will post questions related to the topics covered in class to date. You are to address this question and provide relevant supporting information. It is also required that you reply to one post from a classmate.
This assignment will open on Tuesdays at 12:01 pm. This assignment will be due the following Tuesday at 11:59 pm. See the Course Schedule for due dates of the Discussion Boards.

ENR 3000- Objectives of discussion boards
1. Critically evaluate the use of information from the natural sciences with an emphasis in soil science.
2. Analyze data from graphs and peer review articles.
3. Apply the information learned in class to real-world scenarios.
4. Identify reliable sources of information and use them to discuss soil science-related topics.

Example of questions:
1. Find an info-graphic that relates to soils and discuss why did you like it. There is a lot of interesting information about soils, what they provide, and their importance.
2. Do some research and find a crop where soil pH is managed to either increase its yield or promote a specific plant trait (like changing flower color). Include an image of the crop and explain what and where the practice is being used.

Course Subject & Number: ENR 3000/3001

Expected Learning Outcome 1.3: Successful students are able to employ the processes of science through exploration, discovery, and collaboration to interact directly with the natural world when feasible, using appropriate tools, models, and analysis of data. Please explain the 1-credit hour equivalent experiential component included in the course: e.g., traditional lab, course-based research experiences, directed observations, or simulations. Please note that students are expected to analyze data and report on outcomes as part of this experiential component. *(50-1000 words)*

ELO 1.3 will be fulfilled in ENR 3001
ENR 3001 Weekly Laboratory Assignments (13 assignments per semester, 5% each, 67% of total grade): Students assimilate into collaborative groups of 4 and employ standard methods of soil science to record observed soil behavior, analyze data and report their findings. Students propose explanations of phenomena, drawing upon basic facts, principles and theories of modern soil science. Students extrapolate their findings to answer questions regarding impacts of soil behavior on land use. Laboratory assignment reports are due on a weekly basis. This course fulfills ELO 1.3 through the sequence of presentations, laboratory assignments, quizzes, individual feedback, assigned readings and the land use planning project.

ENR 3001 -Objectives of weekly laboratory assignments
1. Introduce students to standard methods for measuring important soil characteristics
2. Introduce students to standard laboratory techniques and good laboratory practice
3. To encourage collaboration in problem-solving among students within groups
4. To solve simple problems related to soil management, based on soil property data collected and measured in a laboratory setting
5. Extrapolate laboratory scale results to landscape scale recommendations
6. To classify soils at a broad categorical level using US Soil Taxonomy

ENR 3001-For each laboratory assignment, students will collect, graph, analyze and interpret data.
ENR 3001 Weekly Short Quizzes (13 short quizzes, 0.5% each, 7% of total grade): Each student submits answers to 10 questions (short answer, true-false, multiple choice) at the beginning of each laboratory.
ENR 3001- Objectives of weekly short quizzes
1. Prepare students to efficiently execute laboratory procedures
2. Encourage study of reading materials prior to meeting in the laboratory
ENR 3001 Land Use Project Report (1 project report, 10% of total grade): Each student submits an individual (not group) project design of their own creation in the form of a written report to a county zoning board for plan approval. The student includes written text describing their plan elements and their locations based on soil suitability or limitation. The student must draft figures and tables to be referenced in their written discussion. Land use project reports are given three weeks to be uploaded to Carmen for grading by rubric.
ENR 3001- Objectives of land use project report
1. Students navigate the Web Soil Survey and use its soils data resource for land use planning
2. Students assemble figures, tables and text into a well-organized and readable document
3. Students demonstrate an understanding of soil limitation and suitability for their land use plans
4. Students demonstrate their ability to convey to the reader information and ideas in written communication

ENR 3001 Final Exam (1 exam,16% of total grade): The final exam will be comprehensive, consisting of a variety of multiple choice, short answer and true-false questions along with problems related to soil data provided. Typically, the final has about 100 questions to be completed in 1hr 45 minutes.

Course Subject & Number: ENR 3000/3001

GOAL 2: Successful students will discern the relationship between the theoretical and applied sciences, while appreciating the implications of scientific discoveries and the potential impacts of science and technology.

Expected Learning Outcome 2.1: Successful students are able to analyze the inter-dependence and potential impacts of scientific and technological developments. Please link this ELO to the course goals and topics and indicate *specific* activities/assignments through which it will be met. *(50-700 words)*

Experiential Learning (The Carbon Balance Activity): This activity consists of calculating soil organic matter for soils under different conditions in Ohio and reflecting on the importance of soil carbon. The activity will consist of two parts. In the first part, you will be using the OSU soil organic matter calculator to predict the soil organic matter in a field. To complete these calculations, you will be provided with different scenarios that include different cropping patterns, cover crops, erosion, and manure application. Along with the calculation, you will submit one paragraph. As you will learn in this class, soil carbon is important for many biological functions. Using the results obtained from the organic matter calculations and the information learned in class you will answer the question: why is soil organic carbon important? The information should be concise but informational. The second part consists of a short multiple-choice and T or F quiz.

ENR 3000 - Objectives of experiential activity:
1. Understand how different scenarios could change the soil organic matter content.
2. Gain experience using the soil organic matter calculator.
3. Develop skills in how to effectively present data using figures (graphs)
4. Make informed soil management decisions based on scientific data.

Expected Learning Outcome 2.2: Successful students are able to evaluate social and ethical implications of natural scientific discoveries. Please link this ELO to the course goals and topics and indicate *specific* activities/ assignments through which it will be met. *(50-700 words)*

Reflection: In this activity students are expected to write a reflection answering a series of questions provided by the instructor. The reflection will be 2 pages in length, double spaced, font: times new roman, size 12 and will be submitted through Carmen. The questions will be provided with at least 1 one week before the due date. Reflection is due on a Tuesday at 11:59 pm (see schedule for due date).

ENR 3000- Objectives of reflections:

1. Gain an appreciation for the importance of soil science
2. Develop an understanding of how soil science has a direct impact on our daily lives
3. Understand how soils are involved in what is currently happening to our natural resources, environment, climate, and/or food supplies.
4. Gain experience making informed decisions and developing potential solutions to environmental issues.

Example:
How do you think learning about soils will help you understand what is currently happening to our natural resources, environment, climate, and/or food supplies?

Course Subject & Number: ENR 3000/3001

Expected Learning Outcome 2.3: Successful students are able to critically evaluate and responsibly use information from the natural sciences. Please link this ELO to the course goals and topics and indicate *specific* activities/ assignments through which it will be met. *(50-700 words)*

Experiential Learning (The Carbon Balance Activity): The objective of this project is to learn about how different scenarios could change the soil organic matter content. This activity consists of calculating soil organic matter for soils under different conditions in Ohio and reflecting on the importance of soil carbon. The activity will consist of two parts. In the first part, you will be using the OSU soil organic matter calculator (we will be uploading everything you need on Carmen) to predict the soil organic matter in a field. To complete these calculations, you will be provided with different scenarios that include different cropping patterns, cover crops, erosion, and manure application. Along with the calculation you will submit one paragraph. As you will learn in this class, soil carbon is important for many biological functions. Using the results obtained from the organic matter calculations and the information learned in class you will answer the question: why is soil organic carbon important? The information should be concise but informational. The second part consist of a short multiple choice and T or F quiz.
You will be given 3 weeks to complete this activity. Late submissions will not be accepted. More details on this activity will be discussed during the course and further instructions will be posted to Carmen.

ENR 3000: Objectives for carbon balance activity:
1. Recognize the potential of science and technology to address problems of the contemporary world.
2. Understand how data is collected by scientists
3. Analyze and compare organic carbon data
4. Critically evaluate and responsibility use information from the natural sciences. Analyze data using statistics.

Distance Approval Cover Sheet

For Permanent DL/DH Approval

Course Number and Title: ENR 3000: Soil Science

Faculty Preparer Name and Email: Tania Burgos-hernadez.1

Carmen Use

For more on use of Carmen: https://teaching.resources.osu.edu/teaching-topics/carmen-common-sense-best-practices

A Carmen site will be created for the course, including a syllabus and gradebook at minimum. Select Yes

If no: Enter additional details if you responded no...

Syllabus

Proposed syllabus uses the ODEE distance learning syllabus template (or own college distance learning syllabus template based on ODEE model), includes boilerplate language where required, as well as a clear description of the technical and academic support services offered, and how learners can obtain them. Select Yes

Syllabus is consistent and is easy to understand from the student perspective. Select Yes

Syllabus includes a schedule with dates and/or a description of what constitutes the beginning an end of a week or module. Select Yes

If there are required synchronous sessions, the syllabus clearly states when they will happen and how to access them. Select N/A

Additional comments (optional):
Enter any additional comments about syllabus...

Instructor Presence

For more on instructor presence: https://teaching.resources.osu.edu/teaching-topics/online-instructor-presence

Students should have opportunities for regular and substantive academic interactions with the course instructor. Some ways to achieve this objective:

x☐ Regular instructor communications with the class via announcements or weekly check-ins

x☐ Instructional content, such as video, audio, or interactive lessons, that is visibly created or mediated by the instructor

x☐ Regular participation in class discussion, such as in Carmen discussions or synchronous sessions

x☐ Regular opportunities for students to receive personal instructor feedback on assignments

Please comment on this dimension of the proposed course (or select/explain methods above):
I will be providing multiple opportunities for the students to have substantial interaction with the instructor.

Delivery Well-Suited to DL/DH Environment

Technology questions adapted from the Quality Matters rubric. For information about Ohio State learning technologies: https://teaching.resources.osu.edu/toolsets

The tools used in the course support the learning outcomes and competencies. Select yes

Course tools promote learner engagement and active learning. Select yes

Technologies required in the course are current and readily obtainable. Select yes

Links are provided to privacy policies for all external tools required in the course. Select yes

Additional technology comments:
Enter any additional comments about course technology...

Which components of this course are planned for synchronous delivery and which for asynchronous delivery? (For DH, address what is planned for in-person meetings as well.)
The online section will be completely asynchronous. All the information including lectures, assignments, videos will be uploaded to Carmen where they will be divided by modules.

If you believe further explanation would be helpful, please comment on how course activities have been adjusted for distance learning:
Enter comments...

Workload Estimation

For more information about calculating online instruction time: ODEE Credit Hour Estimation

Course credit hours align with estimated average weekly time to complete the course successfully.
Select yes

Course includes direct (equivalent of “in-class”) and indirect (equivalent of “out-of-class)” instruction at a ratio of about 1:2. Select 1:2

Provide a brief outline of a typical course week, categorizing course activities and estimating the approximate time to complete them or participate:
Enter details...

Lectures: multiple lectures of about 15 minutes long will be available weekly to cover the material

Assignments: Students will have at least one out of class assignment

Reading: reading materials including journal articles and book chapters will be assigned weekly

Videos: additional videos are assigned to compliment the lecture material

In the case of course delivery change requests, the course demonstrates comparable rigor in meeting course learning outcomes. Select yes

Accessibility

For more information or a further conversation, contact the accessibility coordinator for the College of Arts and Sciences. For tools and training on accessibility: Digital Accessibility Services

Instructor(s) teaching the course will have taken Digital Accessibility training (starting in 2022) and will ensure all course materials and activities meet requirements for diverse learners, including alternate means of accessing course materials when appropriate. Select yes

Information is provided about the accessibility of all technologies required in the course. All third-party tools (tools without campus-wide license agreements) have their accessibility statements included. Select yes

Description of any anticipated accommodation requests and how they have been/will be addressed. Disability accommodations have been addressed in the syllabus

Additional comments:
Enter any additional comments about accessibility...

Academic Integrity

For more information: https://go.osu.edu/teaching-resources-academic-integrity

The course syllabus includes online-specific policies about academic integrity, including specific parameters for each major assignment: Select yes

Assignments are designed to deter cheating and plagiarism and/or course technologies such as online proctoring or plagiarism check or other strategies are in place to deter cheating: Select yes

Additional comments:
Enter additional comments about academic integrity...

Frequent, Varied Assignments/Assessments

For more information: https://teaching.resources.osu.edu/teaching-topics/designing-assessments-student

Student success in online courses is maximized when there are frequent, varied learning activities. Possible approaches:

x☐ Opportunities for students to receive course information through a variety of different sources, including indirect sources, such as textbooks and lectures, and direct sources, such as scholarly resources and field observation

x☐ Variety of assignment formats to provide students with multiple means of demonstrating learning

x☐ Opportunities for students to apply course knowledge and skills to authentic, real-world tasks in assignments

Comment briefly on the frequency and variety of assignment types and assessment approaches used in this course (or select methods above):
This course includes discussion boards, reflections, exit slips, quizzes, tests and experiential learning activities. The variety of assesments provide opportunities to the students to demonstrate their knowledge. Each week students will have some type of assessment due.

Community Building

For more information: https://teaching.resources.osu.edu/teaching-topics/student-interaction-online

Students engage more fully in courses when they have an opportunity to interact with their peers and feel they are part of a community of learners. Possible approaches:

x☐ Opportunities for students to interact academically with classmates through regular class discussion or group assignments

☐ Opportunities for students to interact socially with classmates, such as through video conference sessions or a course Q&A forum

☐ Attention is paid to other ways to minimize transactional distance (psychological and communicative gaps between students and their peers, instructor, course content, and institution)

Please comment on this dimension of the proposed course (or select methods above):
Students have multiple discussion boards due during the semester where they are required to reply to at least 2 classmates. This promotes interaction between students.

Transparency and Metacognitive Explanations

For more information: https://teaching.resources.osu.edu/teaching-topics/supporting-student-learning-your

Students have successful, meaningful experiences when they understand how the components of a course connect together, when they have guidance on how to study, and when they are encouraged to take ownership of their learning. Possible approaches:

x☐ Instructor explanations about the learning goals and overall design or organization of the course

x☐ Context or rationale to explain the purpose and relevance of major tasks and assignments

x☐ Guidance or resources for ancillary skills necessary to complete assignments, such as conducting library research or using technology tools

x☐ Opportunities for students to take ownership or leadership in their learning, such as by choosing topics of interest for an assignment or leading a group discussion or meeting

x☐ Opportunities for students to reflect on their learning process, including their goals, study strategies, and progress

x☐ Opportunities for students to provide feedback on the course

Please comment on this dimension of the proposed course (or select methods above):
In the reflection, discussion boards and exit slips students have the opportunity to connect what we learn during lecture to real world scenarios. They will be abl to reflect on what they learn in class and take it to the next level where they apply the acquire knowledge.

Additional Considerations

Comment on any other aspects of the online delivery not addressed above:
Enter any additional considerations...