



COURSE DESCRIPTION

This course encompasses soil genesis, morphology, and classification - otherwise known as pedology.

Pedology is a branch of soil science focusing on the formation, morphology, and classification of soils as bodies within the natural landscape. As pedologists, we seek to understand how the properties and distribution patterns of soils worldwide have developed along with broader landforms, biogeochemical environments, and habitats of living organisms.

INSTRUCTOR

Dr. Karen Vaughan
Asst. Professor of Pedology
karen.vaughan@uwyo.edu
www.uwyopedology.com
1005 Ag C
office hours for fall 2019:
MWF 8:30 - 9:00 am &
by appointment

I was born and raised in Coventry, RI. I earned a B.S. in Entomology and Wildlife Conservation from the University of Delaware, an M.S. in Soil Science from the University of Maryland, and a Ph.D. in Soil Science from the University of Idaho. I worked for 3 years with the USDA-NRCS Snow Survey and Soil Survey programs in Salt Lake City, Utah and was on the faculty for 4 years at California Polytechnic State University in San Luis Obispo. In 2015 I joined the faculty at the University of Wyoming where I teach and conduct research in pedology, mineralogy, wetlands, soil landscape development, and biogeochemistry. My goal is to make this course and content interesting, approachable, engaging, and applicable to you. Any feedback you have throughout the semester is welcomed as I am always looking for ways to improve this course and the delivery.

TEACHING ASSISTANTS

Ruben Aleman
Ph.D. student in soil science
raleman1@uwyo.edu
1015 Ag C
office hours for fall 2019:

I'm originally from Tacoma, WA. I earned my B.S in Crop & Soil Science at Oregon State University in Corvallis, OR. During that time I focused on working with and managing small farms and vineyards, but ended up joining a undergraduate research project with the DIRT (Detritus Input and Removal Treatments) Network studying carbon cycling in a temperate forest. I continued on at OSU to earn my M.S. in Soil Science. My thesis revolved around how the deposition of sea-salt aerosols on coastal Oregon soils impacted the cycling of carbon, nitrogen, and phosphorus. Now I'm here at University of Wyoming, beginning a Ph.D. program and looking forward to learning about a new region and beginning a new bout of research! If you have questions about anything feel free to contact me by email or during office hours!

Anna Schwyter
M.S. student in soil science
aschwYTE@uwyo.edu
1015 Ag C
office hours for fall 2019:
T 9:30 - 10:30 am

I was born and raised outside of Philadelphia, Pennsylvania and studied Environmental Resource Management at the Pennsylvania State University, focusing in Soil Science and minoring in Water Resources. After graduation I moved west to Oregon and then California, serving a year as a River Scientist AmeriCorps volunteer and a season as Logistics Coordinator for Outward Bound California. In 2018 I moved to Laramie to pursue my M.S. degree in Soil Science and am excited to be a resource for students throughout this course!

SCHEDULE

Lecture meets MWF 9:00 – 9:50 am in Ag 4021

Lab meets either Tuesday or Wednesday 1:00 – 5:00 pm in STEM 235 or behind the Ag building for field trips

PREREQUISITES

Successful completion of SOIL 2010 or other Introductory Soil Science course.

REQUIRED TEXT

Buol S.W., R.J. Southard, R.C. Graham, and P.A. McDaniel. 2011. *Soil Genesis and Classification*. 6th edition. Wiley-Blackwell. Available at the bookstore and numerous online sources. Also available as a **free** eBook through the UW library (<http://ebookcentral.proquest.com/lib/uwy/detail.action?docID=1138972>).

(aka, the “IG”) Soil Survey Staff. 2015. Illustrated guide to soil taxonomy. U.S. Department of Agriculture, Natural Resources Conservation Service, National Soil Survey Center, Lincoln, Nebraska. pdf available here:

https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/class/taxonomy/?cid=nrcs142p2_053580

Schoeneberger, P.J., D.A. Wysocki, E.C. Benham, and Soil Survey Staff. 2012. Field book for describing and sampling soils, Version 3.0. Natural Resources Conservation Service, National Soil Survey Center, Lincoln, NE.

<https://nrcspad.sc.egov.usda.gov/DistributionCenter/>

Soil Survey Staff. 2014. Keys to Soil Taxonomy, 12th Ed. U.S. Department of Agriculture, Natural Resources Conservation Service, Washington D.C. I will have copies available for you to share in class. This book is available in PDF format from the USDA-Natural Resources Conservation Service at:

http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/class/?cid=nrcs142p2_053580.

LEARNING OUTCOMES

After the successful completion of this course, a student should

- i. be able to make a thorough and technically accurate description of a soil in the field;
- ii. understand and appreciate the relationships and interactions between soils and plant communities;
- iii. have a basic understanding of how soils form and the patterns in which they occur on the landscape;
- iv. be able to make reasonable estimates of soil chemical and physical properties from field observations;
- v. have a working knowledge of Soil Taxonomy.

EXPECTATIONS

I will expect you to:

1. Read and understand the information contained in this syllabus
2. Attend all lectures and laboratory sessions.
3. Read assigned portions of text **BEFORE** each lecture.
4. Ask questions and participate in class discussions.
5. Notify me ahead of time if you cannot be present for a lab or an exam.

You should expect me to:

1. Come to class and be well prepared.
2. Start and end class on time.
3. Use a variety of teaching methods, not just lecture.
4. Encourage and accept points of view different from my own.
5. Encourage questions and discussion during class.

6. Be available after class, during office hours, or any other time you have questions or concerns.
7. Return graded assignments (with the help of a TA) and exams in a timely manner and provide appropriate feedback on your performance. My goal is to return them one week after the due date.
8. Appreciate that this is not the only class you are taking this semester.

EVALUATION AND GRADING CRITERIA

Your course grade will be determined using a variety of metrics with ~20% from lab activities and the final lab project, ~20% from assignments, and ~60% from exams. I will use whole letters (A, B, C, D, F) and + to indicate exceptional work. Extra credit will be available throughout the semester.

In-class assignments & homework	50					
Exams (2)	200	exam 1 =			exam 2 =	
Lab assignments (5)	50	(1)	(2)	(3)	(4)	(5)
Lab final project	50					
Final exam	100					
TOTAL	450					

COURSE WEBSITE

The WyoCourse platform for this course will be updated regularly by the instructor. All lecture slides will be posted to this site. If you notice anything missing from the site, please email me to request the content be added.

COURSE ORGANIZATION

Lecture

Lecture periods will be used to present and discuss the majority of the material for this course. Class time will be used for active learning exercises, example problems, and discussion of more complex material. The framework of the course will be a traditional lecture; however, the presentation will be frequently interrupted for demonstrations, discussions, and small group interactions. Exams will also be given during lecture periods. Attendance is required.

Laboratory

The laboratory will provide hands-on experience in a variety of skills related to soil genesis and classification (either in the lab or in the field). During each session you will complete various exercises and participate in other activities. There will also be time for further discussion of subject matter. Attendance and completion of all activities is required. The first lab will be indoors while the following 5-6 labs will be in the field.

LABORATORY AND FIELD TRIP POLICIES

All laboratory sessions (except the first) will be outdoors during the first half of the semester. Be prepared for rain, wind, sun (hat and sunscreen), insects, ticks, snakes, and allergies. Bring drinking water and snacks. No open-toed shoes or sandals are permitted for fieldwork. Sturdy field boots, long pants, and long-sleeved shirts are recommended. Attendance at ALL laboratory sessions is required. If you have a valid, documented excuse, you must communicate this with the instructor at least a week in advance of the absence. The Ecosystem Science and Management Department will provide transportation for field trips. The University assumes no responsibility when students provide their own transportation.

Supplies required for each lab (to be provided by the student for your own use): (1) soil sampling tool (i.e. heavy duty DULL knife, rock hammer, weeding tool, trowel); (2) clipboard; and (3) calculator.

ATTENDANCE – see UW Regulation 2-108 for full details

You are expected to attend all lectures, laboratory sessions, and field trips. Please be on time. Arriving late disrupts class and is inconsiderate of other students. Exams will be based primarily on material covered in class. Therefore, regular attendance of lectures should lead you to greater success in this course. A valid written excuse (see Excused Absences) is required for missing a laboratory session.

EXCUSED ABSENCES

Work turned in late **will not be accepted** and there will be **no make-up quizzes**. If a school-related obligation (university-related travel, intercollegiate athletics, etc.) conflicts with a scheduled lecture or lab meeting, you must make arrangements at least one week in advance of the absence in the event that there is a scheduled exam, quiz, or homework assignment.

CONDUCT

You are expected to conduct yourself in a mature manner that is considerate and respectful of your classmates, the instructor, and yourself to insure an atmosphere that is conducive to learning. Any person who disrupts class or lab will be asked to leave.

COLLABORATION

You will frequently break into small, informal groups during class discussions. This will allow for greater participation and more open discussion of current lecture topics. You are also encouraged to discuss laboratory problem sets and prepare for exams together. In addition to me, your classmates (or former students, or other professors) are valuable resources—use them. However, all work you submit is to be solely your own (see Academic Integrity).

DISABILITY RESOURCES

If you have a documented disability and wish to discuss special accommodations, please see me in person during the first week of class to make arrangements. Please work with the University Disability Support Services (UDSS) to make accommodations (<http://www.uwyo.edu/udss/>).

CELL PHONE USAGE

I understand, you are important and what you do outside of this course is important. If you must use your phone, please step out of the class (this includes texting and all other phone usage) so you do not disrupt the flow of class. While we are working in small groups, cell phone usage may be permitted to use the calculator function or search the internet for information. If I see you using your phone during class, I will ask you to stop. If I have to ask you again during the semester, I will ask you to leave to room for the remainder of the class period. Please be respectful.

CHILDREN AND GUESTS IN CLASSROOM

If you are unable to find adequate child care, your children are welcome in class. It is the parent/guardian's responsibility to minimize the disturbance to the class. Also, a guest of yours on campus is welcome to attend class with you. Individuals not enrolled at UWYO are not permitted to travel in University vehicles.

ACADEMIC INTEGRITY – see UW Regulation 2-114 for full details

Academic dishonesty is "an act attempted or performed which misrepresents one's involvement in an academic task in any way, or permits another student to misrepresent the latter's involvement in an academic task by assisting in the misrepresentation. Academic dishonesty includes:

- Representing as one's own work material (including ideas and arguments as well as actual words) copied or borrowed from any source, written or otherwise, public or private, without proper citation.
- Using a ghostwriter, commercial or otherwise, for any type of assignment.
- Submitting substantially the same work for more than one class without the explicit permission of all instructors.
- Doing a class assignment for someone else, or allowing someone else to copy one's assignment.
- Using notes or prepared information in an examination, unless authorized by the instructor.
- Taking an examination for someone else, or allowing someone else to take an examination for you.
- Copying from, or assisting another student during an examination.
- Stealing, or otherwise improperly obtaining, copies of an examination before or after its administration.
- Submitting substantially the same work as someone else unless authorized by the instructor."

Please note that the work you submit is the work of record.

DUTY TO REPORT

I want you to feel comfortable coming to me with issues you may be struggling with or concerns you may be having, but please be aware that I have some reporting requirements that are part of my job requirements at UW.

For example, if you inform me of an issue of sexual harassment, sexual assault, or discrimination I will keep the information as private as I can, but I am required to bring it to the attention of the institution's Title IX Coordinator. If you would like to talk to those offices directly, you can contact Equal Opportunity Report and Response (Bureau of Mines Room 319, 766-5200, report-it@uwyo.edu, www.uwyo.edu/reportit). Additionally, you can also report incidents or complaints to the UW Police Department. You can also get support at the STOP Violence program

(stopviolence@uwyo.edu, www.uwyo.edu/stop, 766-3296) (or SAFE Project

www.safeproject.org, campus@safeproject.org, 766-3434, 24-Hour hotline: 745-3556). Another common example is if you are struggling with an issue that may be traumatic or unusual stress. I will likely inform the Dean of Students Office or Counseling Center. If you would like to reach out directly to them for assistance, you can contact them using the info below or going to www.uwyo.edu/dos/uwyocares. Finally, know that if, for some reason, our interaction involves a disruptive behavior or potential violation of policy, I inform the Dean of Students, even when you and I may have reached an informal resolution to the incident. The purpose of this is to keep the Dean apprised of any behaviors and what was done to resolve them.

FOOD ASSISTANCE PROGRAMS IN LARAMIE

It's hard to learn when you are hungry. If you need food assistance, there are several organizations in Laramie that could help. Laramie Soup Kitchen (<https://www.laramiesoupkitchen.org/>) - "All are welcome to enjoy meals at no cost in our friendly and safe environment.", Interfaith-Good Samaritan (<https://www.laramieinterfaith.org/>) - "We offer a food pantry that is open 41 hours per week, and also provide emergency assistance with rent, utilities, or medical needs. Our services are provided without any regard to any religious affiliation." "...does not require proof of income to access our food pantry.", Feeding Laramie Valley (<https://www.feedinglaramievalley.org/>) - "Feeding Laramie Valley is a community-based, designed and led nonprofit program working for food security and an equitable, just and sustainable food system in Albany County, Wyoming," and the Supplemental Nutrition Assistance Program for Wyoming (<http://dfsweb.wyo.gov/economic-assistance/snap>).

CLASSROOM STATEMENT ON DIVERSITY

"The University of Wyoming values an educational environment that is diverse, equitable, and inclusive. The diversity that students and faculty bring to class, including age, country of origin, culture, disability, economic class, ethnicity, gender identity, immigration status, linguistic, political affiliation, race, religion, sexual orientation, veteran status, worldview, and other social and cultural diversity is valued, respected, and considered a resource for learning."

WEEK	DAY	DATE	TOPIC - v1 (August 30, 2019)	READING	LAB
1	M	2-Sep	no class - Labor Day	---	
	W	4-Sep	syllabus & overview	syllabus	no lab
	F	6-Sep	morphological features	35-45	
2	M	9-Sep	morphological features		
	W	11-Sep	horizon descriptions	45-51, PART 2 IG	STEM 235
	F	13-Sep	horizon descriptions	PART 2 IG - Table 1&2	
3	M	16-Sep	epipedons	PART 3 IG - epipedons	
	W	18-Sep	endopedons / subsurface diagnostic horizons	51-62, PART 3 IG remaini	field (1)
	F	20-Sep	soil forming factors (Cl, O ...	91-129	OSDs assigned
4	M	23-Sep	NO CLASS - USDA-NRCS SGI		
	W	25-Sep	NO CLASS - USDA-NRCS SGI		no lab
	F	27-Sep	soil forming factors (...R, PM	---	
5	M	30-Sep	soil forming factors (... PM, T)	---	
	W	2-Oct	review		field (2)
	F	4-Oct	EXAM 1		
6	M	7-Oct	weathering, primary and secondary minerals	141-151	
	W	9-Oct	weathering, primary and secondary minerals	151-161	field (3)
	F	11-Oct	soil forming processes	163-169	
7	M	14-Oct	guest lecture TBD - KV at Purdue		
	W	16-Oct	soil forming processes		field (4)
	F	18-Oct	history, development, and organization of Soil Tax.	22-29, 207-211	
8	M	21-Oct	formative elements	211-222	
	W	23-Oct	formative elements	PART 1 IG	field (5)
	F	25-Oct	moisture and temperature regimes	80-86, IG 1-12 to 1-22	
9	M	28-Oct	review and catch up		
	W	30-Oct	EXAM 2		STEM 235
	F	1-Nov	Gelisols	293-305, IG Part 4*	
10	M	4-Nov	Histosols	307-320, IG Part 4*	
	W	6-Nov	Spodosols	361-373, IG Part 4*	STEM 235
	F	8-Nov	Andisols	249-264, IG Part 4*	
11	M	11-Nov	NO CLASS - SSSA meeting		
	W	13-Nov	NO CLASS - SSSA meeting		no lab
	F	15-Nov	Oxisols & Vertisols	349-359, 385-395, IG Part 4*	
12	M	18-Nov	Aridisols	265-281, IG Part 4*	
	W	20-Nov	Ultisols	375-384, IG Part 4*	STEM 235
	F	22-Nov	Mollisols	331-347, IG Part 4*	
13	M	25-Nov	Alfisols, Inceptisols, Entisols	233-248, 321-329, 283-292	
	W	27-Nov	NO CLASS - THANKSGIVING BREAK	---	none
	F	29-Nov	NO CLASS - THANKSGIVING BREAK	---	
14	M	2-Dec	review soil orders		
	W	4-Dec	spatial arrangement of soil	397-409	STEM 235
	F	6-Dec	grad student oral presentations	---	
15	M	9-Dec	class poster presentations	---	
	W	11-Dec	last day of class - course wrap-up	---	none
	F	13-Dec	Final Exam in class	---	