

GEOL/ENVI 104

Soil: Science & Sustainability

Meeting time & location

MTWRF
9:30 am – 10:45 am
Olin-Rice 187
Remote, Outside

Moodle.macalester.edu
Zoom, Slack

Macalester College
Fall 2020



Course Description:

From the food we eat, to the air we breathe, soil shapes our lives. Soil forms in response to local conditions, recording regional climate variability (if you know how to look). Soil is also one of the most important carbon sinks, so the way we interact with soil has the potential to seriously impact our changing climate. However, as an important agricultural resource, we must continue to utilize soil to feed Earth's growing population. To better understand this under-appreciated layer of Earth, this class will investigate soil formation; variability between types of soil; and the utility of soil in our world today.

Professor Anna Lindquist

I prefer to be called Anna (*she/her/hers*)

If you prefer to be more formal, you are welcome to call me Dr. Lindquist or Professor Lindquist.

Office Hours

Zoom Office Hours during class time Monday and Wednesday and by appointment, I also can be reached by email and on Slack. Conditions permitting, I am also happy to set up a time to meet up outside (we could even grab a coffee – my treat).

I assume you all come to this class with unique sets of skills and experiences. It takes bravery to ask for help when needed. It helps me and enriches the class when you take the time to chat with me about nothing in particular. Both experiences are valuable. I promise to respect you and earn your trust when you take the time to talk to me.

Contact Information

Office: OLRI 115
Email: alindqu1@macalester.edu

Phone: 651-696-6333
(x6333 from campus phones)

Course Policies and Information

Technology and Software: I plan to use Zoom, Slack, and Moodle for this class. The Google suite will also be useful for group work.

We will meet on Zoom about three times each week. If possible, it's great to have your camera on so we can see each other. I understand that this might not be possible. I have also started a class Slack channel. My goal is that this will be a place to share anything soil related, to ask questions about the class, to share updates, and to build a community. If you are unable or unwilling to join, please let me know (I don't need an excuse, just let me know). It is useful to know that Slack allows large group chats, direct messages, and private channels (by invite only) where you can have small group discussions. Please let me know if you need another invite to the class Slack channels. Finally, I use Moodle to post course (lectures, readings, videos, etc.), homework, grades, study guides, and weekly plans. Please be sure to check the Moodle page often for updates and information.

I will use Moodle as a central hub for our class. You should expect to find anything you need there.

Late work: I expect your work to be handed in when it is due. If this is not possible, please discuss it with me before the deadline.

Missing class meetings: I understand that weekly Zoom meetings can be tiring and won't always be possible. Please do your best to attend. If you don't expect to be able to attend any/most Zoom sessions, please email me so we can discuss this at the beginning of the Module.

Preceptor: Emily Lughart will be the preceptor.

Note on Zoom: I hope you will not find the Zoom sessions for this course draining. Over the summer I participated in a Zoom course with daily meetings lasting 90 minutes each. I found that when I completed the readings and engaged with the topics, these Zoom gatherings were a nice way to add structure to my day and to deepen my understanding of the topics covered. I hope you will have a similar experience in this course.

Course Materials

There is no textbook for this course. I will instead be posting videos, slides with lectures, and readings. If you would like a textbook to use as a reference, I recommend *Know Soil, Know Life* by Lindbo, Kozlowski, Robinson; 2012 (pictured below).

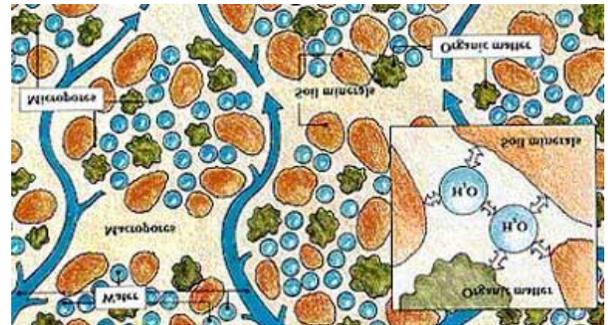
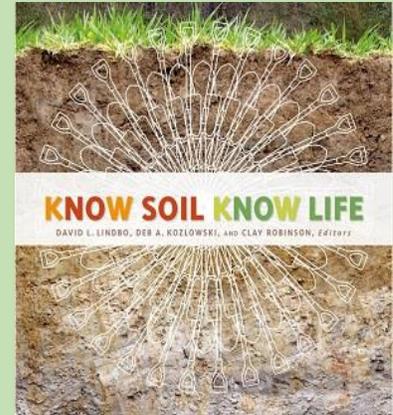


Image courtesy of FAO of the UN.

Learning Objectives

Students will...

- ... describe soil formation and basic soil properties.
- ... compare observable and measurable soil properties with soil formational conditions
- ... explain how land use is related to soil properties and how it affects soil health
- ... evaluate soil's potential impact on climate change – both positive and negative

Tentative Course Schedule

Week	Days	Topic
1	Sep 2-4	Soil physical properties and soil water
2	Sep 8-11	Pedogenesis and soil horizons, soil water (part 2)
3	Sep 14-18	CEC, clays, pH, and soil taxonomy
4	Sep 21-25	Soil carbon cycle and climate change
5	Sep 28-Oct 2	Land use and agricultural soils
6	Oct 5-9	Land use and urban soils
7	Oct 12-16	Land use and pollution
8	Oct 19-20	TBD
Final	TBD	The final will consist of 2-3 longer questions and will be open note.

Weekly Plan

It is my goal to have a consistent plan for each day throughout the semester. My hope is that this will help you plan to accommodate our accelerated semester schedule.

Day	Monday	Tuesday	Wednesday	Thursday	Friday
Plan	New content, activity, and assignment released on Moodle	Group discussions (1 hr)	Meet with small groups (30 min each)	Meet with small groups (30 min each)	Guest speaker, "in class" activity, other
Zoom meeting?	No – but I will have office hours during class time	Yes	Yes, but only today or Thurs	Yes, but only today or Wed	Yes (sometimes)
Suggested activities (for you)	Begin watching/reading course content to prepare for Tuesday	Attend and engage in group discussion, check in with small groups	Complete the week's activity & work on group assignment	Complete the week's activity & work on group assignment	Make sure you've finished the content so you can finish assignments over weekend
Note	Each week's activity and assignment are due the following Monday by 9 am. Upload your finished work to Moodle, please!				

Grading

My goal is that you leave this course with a better understanding of the functionality, formation, and importance of soil. I believe this is best achieved by giving you many opportunities to work with the course content, collaborate with others, and try new things. Studies have shown that grading each assignment and each question does not improve learning outcomes; students get so focused on what their grade is, they don't focus on the course content. Getting things wrong is an important part of the learning process. Having the freedom to incorporate your own ideas and experiences without concern for how it matches the "correct" answer enables you to build a more robust understanding of the topics we'll address. With all of this in mind, I plan to use something called "Contract for a B." This grading plan outlines a set of expectations. If met, you will receive a B for this course. If you go above and beyond (also outlined), you can earn an A. A significant part of the work for this class will be done in collaboration with others. Please be aware that you will not be able to coast through on group work by letting the rest of your group handle the group assignments.

Note: Please tell me if you need accommodations. We will determine a plan that works for you.

You are **guaranteed a grade of B** in this course if you meet all of the following conditions.

- Come to and engage in class Zoom discussions with small and large groups.
 - o I understand that life happens and you may not be able to attend all Zoom sessions. You may miss up to four (4) Zoom sessions and still maintain a B.
 - o Engaging in the discussions is also important. I appreciate, but do not require, your camera being on. Seeing each other is hugely important for remaining engaged in class. If speaking up during Zoom sessions is difficult, I encourage you to use whatever mode of engagement is best for you. Consider commenting or asking questions using the chat function or posting questions and responses in Slack. On average, try to engage at least a couple times in every Zoom you attend (Tuesdays and Fridays).
 - o With this item especially, please let me know if you think this will be difficult. I understand that many things can interfere with attending the Zoom sessions that are a part of this remote module. I do not need you to offer an excuse (but you are welcome to discuss it with me if I can help find a solution), but I am willing to be flexible on this if you anticipate it being a problem.
- Complete the weekly activities thoughtfully.
 - o Each week I will have an activity for you to do (many of them will be outside). I encourage you to do these with other people – friends, family, classmates. This will give you the opportunity to discuss what you're doing and what you're observing.
 - o These activities will have a short response as a way to demonstrate completion. Be thoughtful in your response (but not too long-winded, please).
 - o Including pictures, short videos, or sketches describing what you observe or think about can be a great way to demonstrate thoughtfulness and support the writing you do in the response.
- Answer the weekly questions thoroughly and thoughtfully.
 - o Each week there will be some questions that require you to engage in the content for that week. These should be completed, turned in on time (by 9 am Monday morning), and contain thoughtful answers. You may have to look beyond the content posted for the week for some answers (google it, if nothing else). I am happy to answer any questions you have while working on these. Please ask questions!
 - o You are welcome to work with a classmate on these questions, but please note if you do so on your responses.
- Be an active participant in your group projects.
 - o As above, do the group project thoughtfully and well. Hand it in on time.
 - o Fill out the commentary on how you participated in the group project.
- Thoughtfully and correctly answer the questions on the final.
- **A note on late work:** Life happens. You can turn in three assignments up to two days late and still maintain a B for the class.
- **To get an A:** you must do everything listed above for a B, plus an end-of-module research project on a unique soil-related topic. You may do this with a partner.
- **Pluses and minuses in final grades:** depth of answers to questions, number of missed/late assignments, degree of participation in class, etc...

Accommodations

I am committed to ensuring access to course content for students.

I am committed to ensuring access to course content for all students, including those with disabilities. If you have a disability, please meet with me early in the semester to discuss your accommodation plan. If you have not yet obtained a plan or are unsure if you have a disability that requires accommodation, please contact Disability Services: disabilityservices@macalester.edu, or call 651-696-6974.

Mental Health

I strongly encourage you to make your well-being a priority. Investing time in thinking well about yourself will help you engage more fully in your academic experience, especially during this complicated time. Remember that beyond being a student, you are a human being with your own experiences, thoughts, emotions, and identities. It is important to acknowledge any stressors you may be facing; these can be emotional, physical, cultural, financial, etc., and can affect your academic experience. I encourage you to remember that you have a body with needs. It is important to eat when you are hungry, drink water, use the restroom, and step out of (or away from) class if you are upset or need some air. Please do what is necessary so long as it does not interfere with your or others' ability to be present in the course. Outside of the classroom, strategies to support your well-being include eating and sleeping well, moving your body, and connecting with others. If you are having difficulties, please don't hesitate to contact me and/or find support from other resources, including those offered by the Hamre Center.

Inclusion

I strive to maintain a classroom environment that is inclusive of all students. This includes religious, political, racial, socioeconomic, and gender diversity. Please feel free to reach out if you feel you need accommodations (i.e. for religious holidays) or if I have not achieved this goal. If you prefer to be anonymous, use the course feedback link at the top of the moodle page. Every semester, I continue to work and learn about the best ways to be inclusive and supportive of all students in my classroom.

If needed, Macalester also has a Bias Response Team to support anyone who feels they have been affected by an incident of bias (<https://www.macalester.edu/bias-response-team/>).

Other Notes

Attendance plays an essential role in learning; you are warmly invited, encouraged, and expected to attend all synchronous class/lab meetings (whether in-person or virtual). Attendance will be important not only for your learning, but also for our ability to build a community together and maintain a sense of connection and commitment to one another during this time of imposed physical distance. Your presence in class matters.

The MAX Center is Macalester's academic resource center. I strongly encourage you to take full advantage of any and all of the excellent resources they provide there, as they are committed to supporting all students to succeed at Macalester.