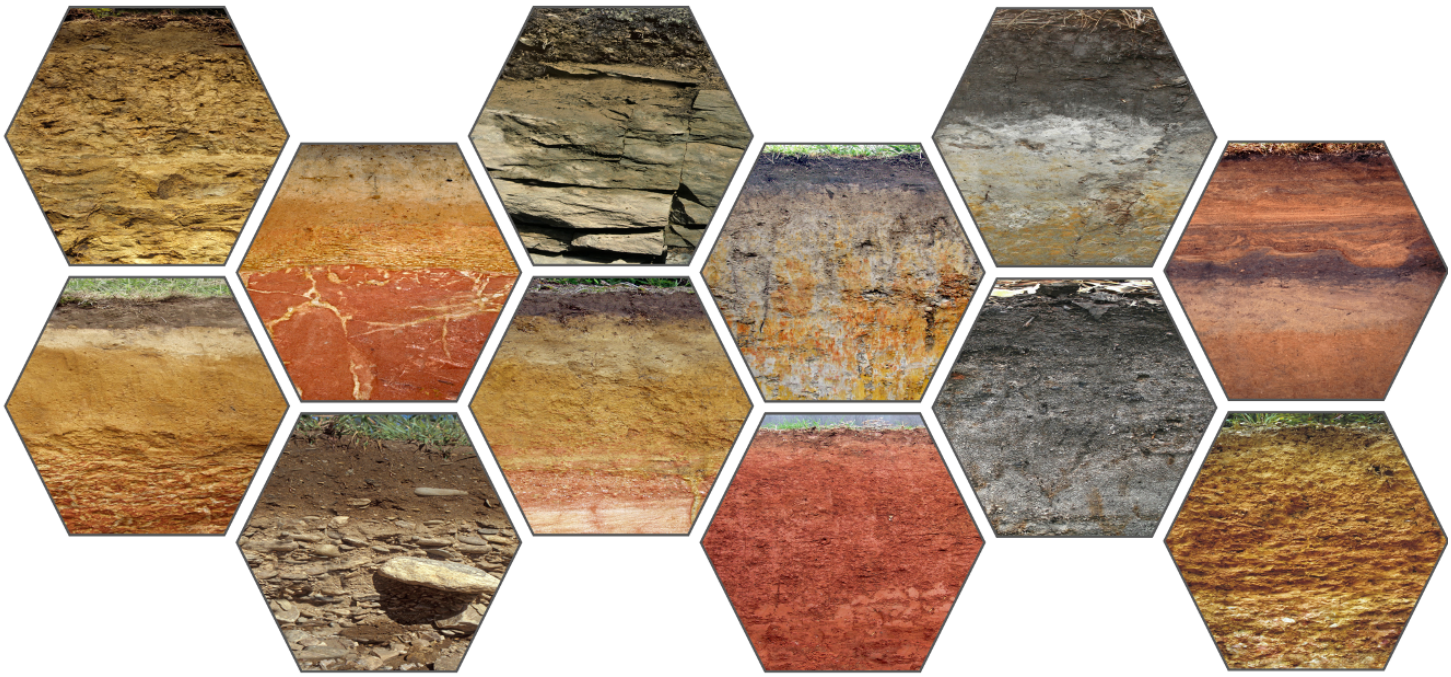
Course Syllabus

ENVS 285: Fund. Concepts in Soil Sci (Spring 2021)



Course Overview

This course emphasizes soil physical, chemical, and biological properties in relation to plant growth, the environment, and the soil's place in our daily lives. The course is intended to introduce students to the importance of soils to humans and the environment through study of their morphology, physical and chemical properties, their distribution, and their biological significance.

Learning Objectives

After completing this course, you will be able to:
(1) understand the physical, chemical, and biological properties and processes of soils and how they control key ecosystem services
(2) appreciate the complexity and diversity of soil types and functions
(3) communicate the importance of soils for environmental health and sustainability

Each student who successfully completes the course should have a practical understanding of the following:

- Properties common to all or most soils on various scales
- Vocabulary to communicate with agricultural and environmental professionals
- Management strategies for different soils

- Management strategies for different soils
- Problem solving skills to manage soils effectively
- The importance of soils in sustaining life
- The impact of soils on environmental quality

Contact Information and Zoom link

You can find contact information of your instructor and TA below. This online class will meet over zoom.

Instructor: Debjani Sihi (email: **debjani.sihi@emory.edu (mailto:debjani.sihi@emory.edu)**)

Synchronous session: Tuesday 9:40-10:55 am eastern time (Zoom link: **https://emory.zoom.us/j/2675074062 (https://emory.zoom.us/j/2675074062)**)

Office hour for Instructor: Friday 4-5 pm eastern time (Zoom link: **https://emory.zoom.us/j/2675074062 (https://emory.zoom.us/j/2675074062)**) or by appointment via email

TA: Yanyu Wang (email: **yanyu.wang@emory.edu (mailto:yanyu.wang@emory.edu)**)

Office hour for TA: Monday 10-11 am eastern time (Zoom link: **https://emory.zoom.us/j/93737816445) (https://nam11.safelinks.protection.outlook.com/?url=https%3A%2F%2Femory.zoom.us%2Fj%2F93737816445&data=04%7C01%7Cdebjani.sihi%40emory.edu%**

Textbook (paper or electronic)

We will primarily use the following textbook for this class (one printed copy is available in the Emory library):

Weil, R.R. and Brady, N.C., 2019. Elements of the Nature and Properties of Soils, 4th Edition. New Jersey: Pearson Prentice Hall.

This is optional, But, if you want to learn more on this topic, you can read the parent book of our primary textbook (one printed copy is available in the Emory library):

Brady, N.C. and Weil, R.R., 2017. The Nature and Properties of Soils, 15th Edition. New Jersey: Pearson Prentice Hall.

Other reading materials will be made available either via course reserves or by open-source materials such as media, podcast, etc.

Course Structure

The course outline is found below. The weekly schedule is consistent throughout the semester. New

The course outline is found below. The weekly schedule is consistent throughout the semester. New material, such as lecture material, videos, will be posted before the class. I will be available for office hours on Fridays from 4 pm to 5 pm. You can also take appointment via email as needed. We will meet as a class online on Tuesdays from 9:40 am to 10:55 am. There will be approximately weekly homework (assignment, quiz, or discussion board participation) activities. **Homework of a particular week will be due by the Monday (11:59 pm) of the following week. Late submissions will receive a 10% reduction in score. However, you will receive 5 "Pandemic Reliefs" for late submissions.** You need to inform the instructor with a brief justification while requesting pandemic relief.

Your success in this course will be determined not only by how you showcase learning the content but also by your participation with the instructor and your classmates during synchronous sessions, discussion boards, and a major group project. Your engagement in these activities will support your development of knowledge in this course and is expected to be at the same extraordinary level with which you complete individual tasks. The anticipated time commitment is as follows:

Homework: Assignment, Quiz, and Discussion (2-3 hours/week);

Synchronous sessions (1.5 hours/week);

Asynchronous material (1.5 hours/week);

Textbook and other Readings (2-3 hours/week);

Variable time commitments for office hours and studying.

Grading Structure

Attendance and participation during synchronous sessions: 10%

Discussion board activities: 10%

Quizes: 20%

Assignments: 20%

Group Project: 20%

Exams: 20%

NOTE: You can drop your lowest Quiz, Assignment, and Discussion.

Your final course letter grade will be based on your total course grade on Canvas. Rubrics for Letter Grades are as follows:

A (92 or higher%); A- (89-91%); B+ (86-88%); B (83-85%); B- (80-82%); C+ (77-79%); C (73-76%); C- (70-72%); D+ (66-69%); D (60-65%); F (59% or lower)

Academic Honesty

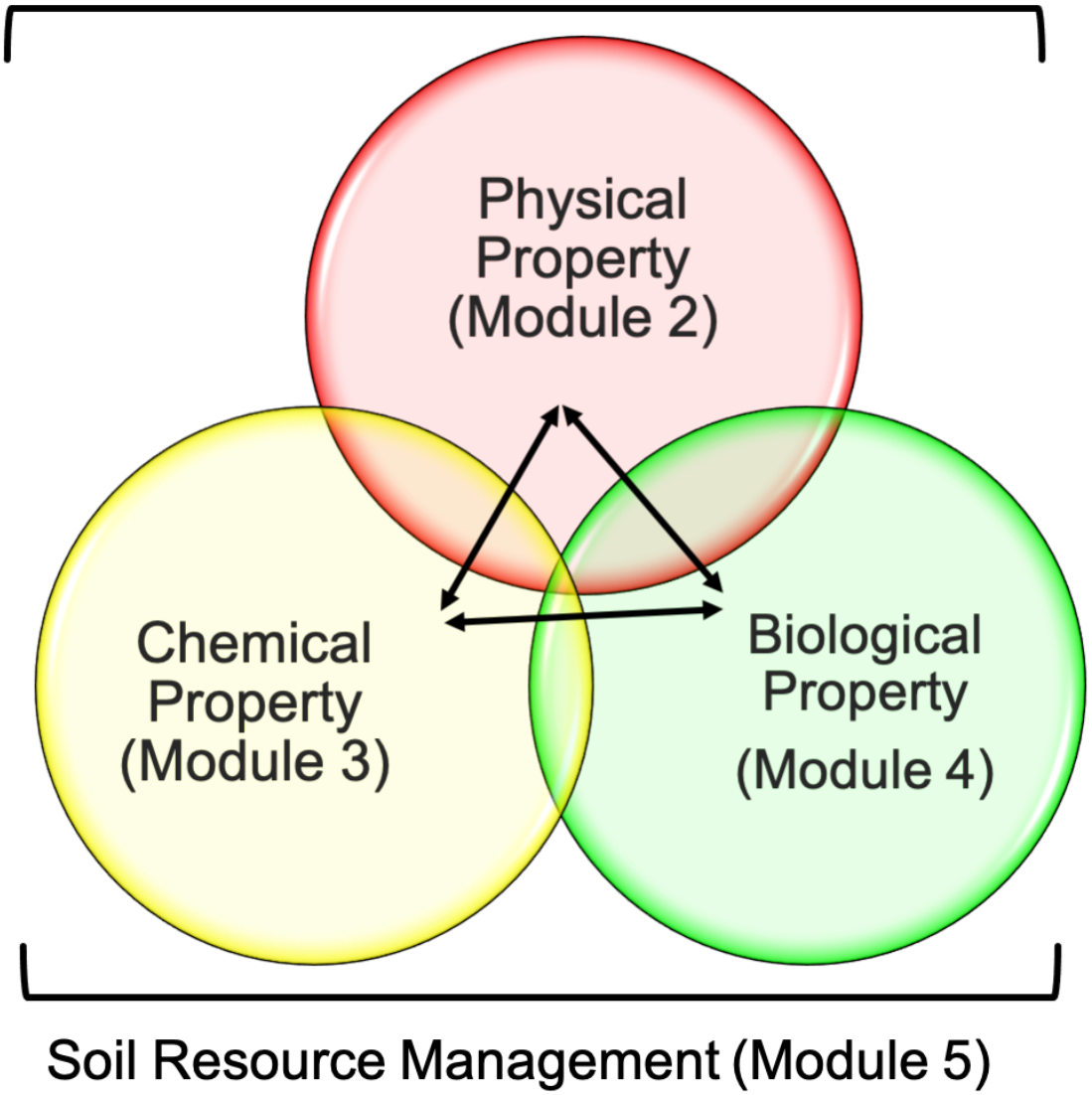
All Quizzes, Assignments, and Exams will be open-book. However, the Honor Code is in effect throughout the semester. By taking this course, you affirm that it is a violation of the code to cheat on exams, to plagiarize, to deviate from the teacher's instructions about collaboration on work that is submitted for grades, to give false information to a faculty member, and to undertake any other form of academic misconduct. You also affirm that if you witness others violating the code you have a duty to report them to the honor council.

http://catalog.college.emory.edu/academic/policies-regulations/honor-code.htmlLinks to an external site. (http://catalog.college.emory.edu/academic/policies-regulations/honor-code.html)

Course Philosophy

Soils are complex and dynamic systems where physics, chemistry, and biology interact. This makes for a unique (and exciting!) scientific challenge. To wrap our heads around this complexity, we will study soils from four different angles. The course is organized into four major interactive parts: (1) soil formation and development, (2) soil physical properties, (3) soil chemical properties, (4) soil biological properties, and (5) Soil Resource Management. We will begin with the basics: what are soils and how do they form. Module 1 will build a foundation that will provide the context for Modules 2, 3, and 4. From there, we will consider how physical, chemical, and biological components of the soil interact to give rise to ecological processes within and outside of soils. We will go through Modules 2, 3, and 4 separately, but will consider how physics, chemistry, and biology interact in soils throughout the quarter. Finally, Module 5 will consider how our knowledge of soil functions and properties will help us in managing soil fertility, and contaminants/pollutants, and soil erosion. You can think of the course materials like this:

Soil Formation & Classification (Module 1)



Weekly Schedule

Time/Date	Topic	Reading
Week 1 (Jan 25 – Jan 29)	Introduction	Chapter 1
Week 2 (Feb 1 – Feb 5)	Soil Formation	Chapter 2
Week 3 (Feb 8 – Feb 12)	Soil Classification	Chapter 3
Week 4 (Feb 15 – Feb 19)	Soil Architecture & Physical Properties	Chapter 4
Week 5 (Feb 22 – Feb 26)	Soil Water/Hydrologic Cycle	Chapter 5 & 6

Week 6 (March 1 – March 5)	Soil Air and Temperature	Chapter 7
Week 7 (March 8 – March 12)	Exam 1	
Week 8 (March 15 – March 19)	Soil Colloid	Chapter 8
Week 9 (March 22 – March 26)	Soil pH, Salinity, and Sodicity	Chapter 9
Week 10 (March 29 – Apr 2)	Soil Biology/Ecology	Chapter 10
Week 11 (Apr 5 – Apr 9)	Soil Organic Matter	Chapter 11
Week 12 (Apr 12 – Apr 16)	Soil Nutrient Cycle and Management	Chapter 12 & 13
Week 13 (Apr 19 – Apr 23)	Soil Degradation and Chemical Pollution	Chapter 14 & 15
Week 14 (Apr 26 – Apr 30)	Final Project & Exam 2	
Week 15 (May 3)	Class Ends	

Important Spring 2021 Dates

We will schedule rest days following the ECAS schedule for undergraduate courses. The rest days are designed to be free of scheduled class meetings and asynchronous homework (assignments, quizzes, and discussion board activities) allowing students and faculty a break from synchronous class meeting times. The scheduled rest days are Feb 17, March 16 and April 14. Also, there will be no grading activity for the week of March 15-19, 2021.

Netiquette and Expectations

- During our synchronous sessions, use Zoom tools to mute and unmute your mike, raise hand to participate, signal that you have stepped away, or to “chat” some participatory cues to the instructor
- Use appropriate (and do not use inappropriate) intensifiers to help convey meaning. Bold or i*talicized* font are great ways to help emphasize your point!
- Avoid “flaming” (online “screaming”) or sentences typed in all caps

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- Respect others' privacy. Do not quote or forward others' comments without the original author's permission.
- Use appropriate language. Avoid swearing or coarse or rude language. Observe good grammar.
- Embrace diversity in the online classroom and throughout the course.

Student Resources

Supporting Student Well-being during a global pandemic is important for an instructor. Feel free to reach out to your instructor if you suffer from any health issues including mental health (or emotional) issues. For more information, students are also encouraged to look at professional resources available from CFDE in support of their academic endeavors. Visit the following link for more information:

https://cfde.emory.edu/resources/teaching-pedagogy/student-support/supporting-student-well-being-2021.html (https://cfde.emory.edu/resources/teaching-pedagogy/student-support/supporting-student-well-being-2021.html)

Also, resources are available to Emory undergraduates that enriching their educational experience and support their academic progress. For a list of programs and appointment instructions, visit **http://college.emory.edu/oue/current-students/student-support/index.html (http://college.emory.edu/oue/current-students/student-support/index.html%C2%A0)**

Accessibility and Accommodation

Providing an inclusive learning environment is a priority for me as an instructor so that every student to succeed. The Department of Accessibility Services (DAS) works with students who have disabilities to provide reasonable accommodations. To request accommodations, you must register with the DAS at http://accessibility.emory.edu/students/. Accommodations cannot be retroactively applied so you need to contact DAS as early as possible and contact me as early as possible in the semester to discuss the plan for implementation of your accommodations. For additional information about accessibility and accommodations, please contact the Department of Accessibility Services at (404) 727-9877 or accessibility@emory.edu.

Course Summary:

Date	Details	Due
Mon Feb 1, 2021	**Introductory Survey** (https://canvas.emory.edu/courses/87362/assignments/447692)	due by 11:59pm

Date	Details	Due
Mon Feb 8, 2021	Discussion (Week 1) (https://canvas.emory.edu/courses/87362/assignments/447730)	due by 11:59pm
	Discussion (Week 2) (https://canvas.emory.edu/courses/87362/assignments/450664)	due by 11:59pm
	Quiz (Week 1) (https://canvas.emory.edu/courses/87362/assignments/447790)	due by 11:59pm
	Quiz (Week 2) (https://canvas.emory.edu/courses/87362/assignments/450759)	due by 11:59pm
Mon Feb 15, 2021	Discussion (Week 3) (https://canvas.emory.edu/courses/87362/assignments/453580)	due by 11:59pm
	Quiz (Week 3) (https://canvas.emory.edu/courses/87362/assignments/453582)	due by 11:59pm
Tue Feb 23, 2021	Discussion (Week 4) (https://canvas.emory.edu/courses/87362/assignments/455859)	due by 11:59pm
	Quiz (Week 4) (https://canvas.emory.edu/courses/87362/assignments/455965)	due by 11:59pm
	Week 4 Assignment (https://canvas.emory.edu/courses/87362/assignments/455963)	due by 11:59pm
Mon Mar 1, 2021	Quiz (Week 5) (https://canvas.emory.edu/courses/87362/assignments/457464)	due by 11:59pm
	Discussion (Week 5) (https://canvas.emory.edu/courses/87362/assignments/457466)	due by 11:59pm
Mon Mar 8, 2021	Discussion (Week 6) (https://canvas.emory.edu/courses/87362/assignments/459640)	due by 11:59pm
	Quiz (Week 6) (https://canvas.emory.edu/courses/87362/assignments/459641)	due by 11:59pm
Thu Mar 11, 2021	Exam 1 (https://canvas.emory.edu/courses/87362/assignments/462579)	due by 11:59pm

Date	Details	Due
Fri Mar 12, 2021	**Week 5-6 Assignment** (https://canvas.emory.edu/courses/87362/assignments/461292)	due by 11:59pm
Sun Mar 14, 2021	**Exam 1** (https://canvas.emory.edu/courses/87362/assignments/462579) (1 student)	due by 11:59pm
Tue Mar 30, 2021	**Discussion (Week 9)** (https://canvas.emory.edu/courses/87362/assignments/467173)	due by 11:59pm
	Quiz (Week 9) (https://canvas.emory.edu/courses/87362/assignments/467174)	due by 11:59pm
Fri Apr 2, 2021	**Week 9 Assignment** (https://canvas.emory.edu/courses/87362/assignments/468287)	due by 11:59pm
Mon Apr 5, 2021	**Discussion (Week 10)** (https://canvas.emory.edu/courses/87362/assignments/469048)	due by 11:59pm
	Mid-Term Check in or Feedback (https://canvas.emory.edu/courses/87362/assignments/468530)	due by 11:59pm
	Quiz (Week 10) (https://canvas.emory.edu/courses/87362/assignments/469044)	due by 11:59pm
Mon Apr 12, 2021	**Quiz (Week 11)** (https://canvas.emory.edu/courses/87362/assignments/471132)	due by 11:59pm
	Discussion (Week 11) (https://canvas.emory.edu/courses/87362/assignments/471131)	due by 11:59pm
Tue Apr 20, 2021	**Week 11 Assignment** (https://canvas.emory.edu/courses/87362/assignments/471144)	due by 11:59pm
Mon May 3, 2021	**Discussion (Week 4)** (https://canvas.emory.edu/courses/87362/assignments/455859) (1 student)	due by 11:59pm
Fri May 7, 2021	**Exam 2** (https://canvas.emory.edu/courses/87362/assignments/476805)	due by 11:59pm

Date	Details	Due
	Exam 2.1 (https://canvas.emory.edu/courses/87362/assignments/476856)	due by 11:59pm
	Exam 2.2 (https://canvas.emory.edu/courses/87362/assignments/476859)	due by 11:59pm
	Exam 2.3 (https://canvas.emory.edu/courses/87362/assignments/476858)	due by 11:59pm
	Exam 2.4 (https://canvas.emory.edu/courses/87362/assignments/476855)	due by 11:59pm
Sat May 8, 2021	Exam 2 (https://canvas.emory.edu/courses/87362/assignments/476805) (1 student)	due by 11:59pm
	Exam 2.1 (https://canvas.emory.edu/courses/87362/assignments/476856) (1 student)	due by 11:59pm
	Exam 2.2 (https://canvas.emory.edu/courses/87362/assignments/476859) (1 student)	due by 11:59pm
	Exam 2.3 (https://canvas.emory.edu/courses/87362/assignments/476858) (1 student)	due by 11:59pm
	Exam 2.4 (https://canvas.emory.edu/courses/87362/assignments/476855) (1 student)	due by 11:59pm
Sun May 9, 2021	Exam 2 (https://canvas.emory.edu/courses/87362/assignments/476805) (1 student)	due by 11:59pm
	Exam 2.1 (https://canvas.emory.edu/courses/87362/assignments/476856) (1 student)	due by 11:59pm
	Exam 2.2 (https://canvas.emory.edu/courses/87362/assignments/476859) (1 student)	due by 11:59pm

Date	Details	Due
	Exam 2.3 (https://canvas.emory.edu/courses/87362/assignments/476858) (1 student)	due by 11:59pm
	Exam 2.4 (https://canvas.emory.edu/courses/87362/assignments/476855) (1 student)	due by 11:59pm
Wed May 12, 2021	**Exam 2** (https://canvas.emory.edu/courses/87362/assignments/476805) (1 student)	due by 11:59pm
	Exam 2.1 (https://canvas.emory.edu/courses/87362/assignments/476856) (1 student)	due by 11:59pm
	Exam 2.2 (https://canvas.emory.edu/courses/87362/assignments/476859) (1 student)	due by 11:59pm
	Exam 2.4 (https://canvas.emory.edu/courses/87362/assignments/476855) (1 student)	due by 11:59pm
	Exam 2.3 (https://canvas.emory.edu/courses/87362/assignments/476858) (1 student)	due by 11:59pm
Mon May 17, 2021	**Discussion (Week 10)** (https://canvas.emory.edu/courses/87362/assignments/469048) (4 students)	due by 11:59pm
	Discussion (Week 11) (https://canvas.emory.edu/courses/87362/assignments/471131) (2 students)	due by 11:59pm
	Discussion (Week 12) (https://canvas.emory.edu/courses/87362/assignments/472548) (2 students)	due by 11:59pm
	Discussion (Week 5) (https://canvas.emory.edu/courses/87362/assignments/457466) (1 student)	due by 11:59pm

Date	Details	Due
	Discussion (Week 6) (https://canvas.emory.edu/courses/87362/assignments/459640) (2 students)	due by 11:59pm
	Discussion (Week 9) (https://canvas.emory.edu/courses/87362/assignments/467173) (2 students)	due by 11:59pm
	Quiz (Week 10) (https://canvas.emory.edu/courses/87362/assignments/469044) (4 students)	due by 11:59pm
	Quiz (Week 11) (https://canvas.emory.edu/courses/87362/assignments/471132) (3 students)	due by 11:59pm
	Quiz (Week 6) (https://canvas.emory.edu/courses/87362/assignments/459641) (2 students)	due by 11:59pm
	Quiz (Week 9) (https://canvas.emory.edu/courses/87362/assignments/467174) (1 student)	due by 11:59pm
	Week 11 Assignment (https://canvas.emory.edu/courses/87362/assignments/471144) (2 students)	due by 11:59pm
	Week 5-6 Assignment (https://canvas.emory.edu/courses/87362/assignments/461292) (1 student)	due by 11:59pm
	Week 9 Assignment (https://canvas.emory.edu/courses/87362/assignments/468287) (5 students)	due by 11:59pm
	Discussion (Week 11) (https://canvas.emory.edu/courses/87362/assignments/471131) (1 student)	
	Discussion (Week 11) (https://canvas.emory.edu/courses/87362/assignments/471131) (1 student)	

Date	Details	Due
	Discussion (Week 11) (https://canvas.emory.edu/courses/87362/assignments/471131) (1 student)	
	Discussion (Week 12) (https://canvas.emory.edu/courses/87362/assignments/472548)	
	Roll Call Attendance (https://canvas.emory.edu/courses/87362/assignments/447819)	