

## **AGRONOMY 278: Fundamentals of Soil Science - Spring 2020**

**Instructor:** Dr. Joel Gruver

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**Office Hours:** MW 9-10, 11-noon

**Class meeting times and places:**

Lectures will take place in Knoblauch 152 – Monday, Wednesday & Friday 8-8:50 AM  
Labs will start in Knoblauch Hall 305 and then normally move to the teaching lab (KH 301)  
Lab sections 1 and 2 will meet from 8-9:50 and 10-11:50, respectively. Lab activities will include discussion, quantitative problem solving, videos, demonstrations, hands-on experimentation, field trips and quizzes.

**Text:** No text – readings from multiple sources will be assigned

**Course description:**

This course introduces the major principles and applications of soil science. The course will begin with a brief exploration of the historical development of soil science as a distinct discipline. Subsequent topics investigated will include soil functions, soil formation and taxonomy, soil macro- and micromorphology, air and water dynamics in soil, soil ecology and organic matter, soil fertility, soil conservation & soil health.

**Course objectives:**

At the end of the course, students should be able to:

- describe the historical development of soil science
- describe how soils form, change and are classified
- describe major soil functions in natural and managed ecosystems
- describe major soil properties and how they impact soil functions
- describe important soil management & conservation strategies
- describe employment opportunities related to soil science

**Attendance and deadlines:**

Attendance will be MONITORED (mostly using ACADLY). Students who miss 5 or fewer lectures will receive an attendance grade of 100%. Each additional lecture missed (beyond 5) will result in a reduction of your attendance grade by 20%. All missed lectures will be counted the same (regardless of reason) but students who communicate in advance about missed lectures will receive some extra credit opportunities. Assignments submitted after designated due dates will only be accepted if an extension was granted by the instructor. Make-up quizzes or exams will only be an option for students will communicate in advance. There will be 4-5 quizzes and 1 final exam.

**Academic honesty:**

The WIU academic integrity policy will be strictly followed in this class.

<http://www.wiu.edu/policies/acintegrity.shtml>

**NO CHEATING, PLAGIARISM, OR OTHER VIOLATIONS OF THE WIU ACADEMIC INTEGRITY POLICY WILL BE TOLERATED.**

**Lecture schedule:**

<b>Week #</b>	<b>Lecture dates (M, W, F)</b>			<b>Lecture topic</b>
1	1/13	1/15	1/17	History of soil science
2	-	1/22	1/24	What does soil do for you?
3	1/27	1/29	1/31	Factors of soil formation
4	2/3	2/5	2/7	Soil morphology
5	2/10	-	2/14	Soil classification
6	2/17	2/19	2/21	The soil skin
7	2/24	2/26	2/28	The soil sponge
8	3/2	3/4	3/6	Managing air/water balance
9	-	-	-	<b>Spring Break</b>
10	3/16	3/18	3/20	Soil ecology - part 1
11	3/23	3/25	3/27	Soil ecology - part 2
12	3/30	4/1	4/3	Soil organic matter
13	4/6	4/8	4/10	Soil fertility principles
14	4/13	4/15	4/17	Managing soil fertility
15	4/20	4/22	4/24	Soil conservation
16	4/27	4/29	5/1	Soil health
17	5/4	5/6	5/8	Review for final
18	<b>Monday 5/11 @ 8 am</b>			<b>Final exam</b>

**Lab schedule:**

<b>Week #</b>	<b>Lab</b>	<b>Planned activities</b>
1	1/14	Comparison of paired soil samples with contrasting management histories (fence row vs. crop field and long-term no-till vs. conventional till)
2	1/21	Slake test and discussion of soil's diverse functions
3	1/28*	Investigation of soil parent materials and weathering processes
4	2/4	Soil color and observation of soil monoliths
5	2/11*	Web soil survey and technical soil classification systems
6	2/18	Texture by feel and particle size analysis
7	2/25	Exploring soil water concepts using sponges and capillary tubes

8	3/3*	Methods of measuring soil water
9	---	<b>Spring Break</b>
10	3/17	Soil biology videos: observation and discussion
11	3/24	Exploring vermiculture and impact of biological activity on soil structure
12	3/31*	Methods of measuring SOM (active C and loss-on-ignition SOM)
13	4/7	Exploring soil chemical properties (pH, CEC, adsorption of dyes)
14	4/14*	Soil test interpretation and calculations
15	4/21	Field trip to university farm/rainfall simulator
16	4/28	Field trip to the WIU Organic Research Farm
17	5-5	Review for the final

**Quizzes are likely to take place on lab dates with an \***

**How your grade for the course will be calculated:**

Quizzes	=	30 %	A	93 - 100	C	73-76
Final exam	=	20 %	A-	90 - 92	C-	70-72
Lab activities/attendance	=	20%	B+	87-89	D+	67-69
Lecture attendance	=	10%	B	83-86	D	63-66
Homework*	=	10 %	B-	80-82	D-	60-62
Interview Project	=	10 %	C+	77-79	F <	60

\* homework will be submitted primarily using western online and the interview archive

**Attention Education Majors:**

The changes within the Illinois State Teaching License requirements, students are required to receive a grade of a "C-" or better in this course in order to meet state requirements. With the university's +/- grading system, receiving a grade below a "C-" will require you to retake this course or find a substitute course to meet School of Agriculture graduation requirements.

**Student Rights and Responsibilities:**

Detailed information regarding student rights and responsibilities can be found at <http://www.wiu.edu/provost/student/>. It is your responsibility to be familiar with the posted information.

**Special Accommodations:**

In accordance with University policy and the Americans with Disabilities Act (ADA), special accommodations may be made for any student who notifies the instructor of the need for an accommodation. It is imperative that you take the initiative to bring such needs to the instructor's attention, as he/she is not legally permitted to inquire about the needs of specific students. Students who may require special assistance in emergency evacuations (i.e. fire, tornado, etc.) should communicate with the instructor as to the most appropriate procedures to follow in such an emergency. Contact Disability Support Services at 298-2512 for additional services.