Course Syllabus
Pedology (SOCR 440)

Fall 2018
Lecture: PL SCI W212; Recitation: Walnut 108

Instructor and Teaching Assistant Contact Information

Instructor: Suellen Melzer, Ph.D.
Office Phone: 970-491-1323
Department Phone: 970-491-6295
Email: Please contact me through the Canvas email; or Susan.melzer@colostate.edu
Office Location/ Hours: C-019 PL SCI/ M,W,F 12:00-1:00; open door policy or by appointment

Course Description
Pedology is the branch of soil science that addresses soils, their properties, origins, distribution and occurrence on the landscape, as well as their evolution through time. It is the study of soils as naturally occurring phenomena taking into account their composition, distribution and method of formation (Schaetzl & Anderson 2005). This is a 4-credit hour senior level course emphasizing soils as a natural component of ecosystems and will focus on the process of soil formation, characterization, classification, and soil survey methods.

General Course Objectives & Outcomes
Upon successful completion of this course students shall have insight into the complex relationships of the soil ecosystem by understanding soil forming factors and pedological processes and properties. Specifically, the students should be able to:

1. identify and properly describe the morphological characteristics/properties of soil profile development in the context of external factors and internal processes.
2. technically interpret and judge the soil for classification and land use recommendations.
3. assess the landscape-scale distribution of soils as a function of factors and processes.
4. distinguish soil-landscape patterns and geomorphology to make predictions about soil properties.

Course Materials

Required Texts:

Reference Texts:
   http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/nedc/training/soil/?cid=nrcs142p2_053580
Methods of Instruction

This is a 4-credit hour course that will meet M, W, F. Two hours per week will be spent in class learning course material, three hours per week will be spent in the field for hands on learning, and 1 hour per week will be spent in recitation for more in-depth clarification/reviews and quizzes. Tests are included in the 6 hours/week dedicated to this class. However, chapter readings, course assignments, and final project are homework and require time spent outside of class. Students are responsible for regularly reviewing the course schedule and completing all required assignments. There will be:

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Graded Points</th>
<th>Percent of Final Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit Exams (2 @ 150 pts. ea.)</td>
<td>300</td>
<td>30</td>
</tr>
<tr>
<td>Laboratory Assignments (9 @ 40 pts. ea.)</td>
<td>360</td>
<td>36</td>
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<tr>
<td>Group Project (1)</td>
<td>150</td>
<td>15</td>
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<tr>
<td>Unit Assignments (2 @ 70 pts. ea.)</td>
<td>140</td>
<td>14</td>
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<tr>
<td>Quizzes (5 @ 10 pts. ea.)</td>
<td>50</td>
<td>5</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>1000</strong></td>
<td><strong>100%</strong></td>
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Grading Scale

<table>
<thead>
<tr>
<th>Grades</th>
<th>Percentage</th>
<th>Grading Scale</th>
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<tbody>
<tr>
<td>Grade = A</td>
<td>90-100+%</td>
<td>Grade = B</td>
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<tr>
<td>Grade = C</td>
<td>70-79%</td>
<td>Grade = D</td>
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<tr>
<td>Grade = F</td>
<td>59% and below</td>
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Course Schedule and Assignments

**Quizzes** – There will be 5 quizzes worth 10 points each and you will be allotted 15 minutes to complete each. Quizzes will be administered during the recitation hour of the selected weeks.

**Exams** – There will be 2 unit exams worth 150 points each. They may be formatted as multiple choice, short answer, fill in the blank, labeling diagrams and essay.

**Assignments** – Access and submit assignments using the assignments tool in Canvas on the appropriate due date. Instructions and grading of assignments will be provided per assignment.

- **Assignment #1 – Interview (DUE Sunday, Sept. 9th) (7%)**
  First, please read Amundson, R. “Soil preservation and the future of Pedology” available in your Canvas folder. Then, conduct a brief interview of two separate members of the community with different occupations (e.g. engineer, water treatment plant worker, miner, scientist/professor, etc.). The interview should include ~5-8 questions each. Please submit your interview questions with responses and follow with a summary paragraph comparing and contrasting the perspectives
of your interviewee’s on the importance of soil. Include a second paragraph relating these perspectives to those highlighted in your reading of the article by Amundson.

- **Assignment #2 – Mass Balance (Started in class on Nov. 14th and DUE Sunday, Nov. 18th) (7%)**

Read, Chadwick O.A., Brimhall G.H., and Hendricks D.M. (1990) From a black to a gray box- a mass balance interpretation of pedogenesis. Geomorphology 3: 369-390, and any other supporting material in your text or elsewhere (Chiquet et al.) to help you interpret and examine the mass balance analysis provided to you. Compare and contrast your interpretation of these two profiles by creating depth-plots for strain and for transport (Tj,w) of 3 different elements (e.g. Fe, K, Ca) of your choice. Note that the two locations are in Colorado, from Fraser Experimental Forest (FEF) and the Shortgrass Steppe (SGS). What do these data (e.g. plots) tell you about the soil processes occurring at these two sites with regard to your three chosen elements? How is the elemental cycling within the depth of the soil influenced by weathering losses, atmospheric inputs, and the overlying vegetation?

**Laboratories** – There will be 9 laboratories consisting of primarily field excursions and a few indoor exercises. Field reports written for assessment of the field excursions MUST be written and submitted in Canvas as a WORD document and will be graded according to the rubric below (also found separately in Canvas). Field lab reports will be DUE the Sunday (midnight) following the respective M/W lab periods. The following is a guideline of how to format your report:

1. Name, Date, Location and Title (representing/describing the theme of the field trip).
2. Introduction
3. Body: Include pictures to guide the following discussion
   - Accurate descriptions of what you observed on the trip, in your own words (be specific).
   - Clear explanations of the scientific concepts and principles illustrated by what you observed.
   - An explanation of what you found scientifically valuable and informative about the trip, in your own words. Incorporate questions posed on working sheets into your explanation.
4. Conclusion/Summary
5. Other guidelines: 1-2 pages double spaced, 11 point, Arial Font…although I am far more interested in clarity of writing and accuracy of concepts than in length

<table>
<thead>
<tr>
<th>Indicators of Effective Content</th>
<th>Pedology Field Trip Report Rubric</th>
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<tbody>
<tr>
<td>Science content/field notes</td>
<td>Completed (40-36 points)</td>
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<td>Competent (35-32 points)</td>
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<td>Developing (31-28 points)</td>
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<td>Beginning (27-24 points)</td>
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<td>Quality of information</td>
<td>Information clearly relates to</td>
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<td>the main topic. It includes</td>
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<td>several supporting details</td>
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<td>and/or examples. Student</td>
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<td></td>
<td>weaves together experiences</td>
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<td>with information studied in class.</td>
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<td>Organization/Format (see syllabus)</td>
<td>Information is very organized</td>
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<td>with well-constructed paragraphs</td>
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<td></td>
<td>and subheadings. Student</td>
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<td></td>
<td>demonstrates superior knowledge of</td>
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<td>using word processing software.</td>
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<td>Mechanics</td>
<td>Almost no grammatical, spelling</td>
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<td>or punctuation errors. Student</td>
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<td>has clear command of language</td>
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<td>and standard American English and</td>
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<td>conventions.</td>
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<td>Participation</td>
<td>Completed appropriate number of</td>
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<td>hours and demonstrated overall</td>
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<td>focus.</td>
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<td>Timely</td>
<td>Appropriate submission format and</td>
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<td>timely.</td>
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<td>Report submission format was</td>
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<td>followed, but was 1 day late.</td>
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<td>Report submission format was</td>
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<td>followed, but was &gt;1 day late.</td>
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<td>Report was not submitted</td>
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<td>following guidelines and was</td>
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<td></td>
<td>late.</td>
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</table>
**Final Project** – The final course project is to collect (field/lab, 25 pts), analyze (25 pts) and present (100 pts) data from Rist Canyon given a chosen question/hypothesis. Other raw data sets or mined data will be used depending on group’s proposed question. Data will be compiled into a provided handbook with leading questions. Completion and submission of handbook is DUE Friday, Nov. 30th. Presentation of work will be in the form of a powerpoint presentation that is DUE Friday, Dec. 7th and given to the class during the final week of class and during exam week (if necessary). This is a group (groups of 3) exercise worth 150 points. Details will be provided.

**Course Attendance and Participation Policy**

Regular, active, and meaningful participation in learning activities is a critically important component of this course and is essential to your success. Frequency and quality of participation may affect your grade.

- **Participation:** Active participation is expected of all students in this course.
- **Attendance Policy:** Please familiarize yourself with CSU's Attendance Policy. [http://catalog.colostate.edu/general-catalog/academic-standards/academic-policies/](http://catalog.colostate.edu/general-catalog/academic-standards/academic-policies/)

Read and refer to this document regularly. It will tell you what assignments you should complete, and how and when you will be assessed.

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture Topics</th>
<th>Laboratory &amp; Field Trips</th>
<th>Assignments &amp; Assessments</th>
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<tbody>
<tr>
<td>Week 1: Aug 20th -26th</td>
<td>• Introduction to Pedology</td>
<td>NO LAB/FIELD</td>
<td>Read 1: ch 1-3</td>
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<tr>
<td>Week 2: Aug 27th-Sept 2nd</td>
<td>• Soil morphology</td>
<td>Lab: Morphology (#1)</td>
<td>Read 1: ch 7 Complete: Lab #1 (Due Aug 31st in recitation)</td>
</tr>
</tbody>
</table>
| Week 3: Sept 3rd -9th | • No class Monday/ Labor Day  
• Soil classification | NO LAB/FIELD | Complete:  
• Quiz 1  
Assign 1: Interview (Due Sept 9th 11:59 pm) |
| Week 4: Sept 10th-16th | • No F2F class Monday-  
meet online  
• Soil composition/ mineralogy | Field: Ardec & Carr (#2 & 3) | Read 1: ch 4, 9 Complete:  
Lab #2/3: Report (Due Sept 16th 11:59 pm) |
| Week 5: Sept 17th -23rd | • Soil chemistry  
• Soil weathering | Field: Masonville (#4) | Read 1: ch 9,10,11 Complete:  
• Quiz 2  
Lab #4: Report (Due Sept 23rd 11:59 pm) |
| Week 6: Sept 24th –Sept 30th | • Soil Geomorphology | Field: PLC, Greeley (#5) | Complete:  
• Quiz 3  
Lab #5: Report (Due Sept 30th 11:59 pm) |
| Week 7: Oct 1st -7th | • Pedogenic processes  
• Exam Review | Field: Rist Canyon;  
Final Project, Part I: Field Data Collection (no official lab report this week) | Read 2: ch 6, 7 Complete:  
Final project: field data  
Final project topic development and prep samples for moisture (in recitation) |
| Week 8: Oct 8th –14th | **Exam Oct. 8th (Mon)** | Models of Soil Formation 1) Climate | **Read 1**: ch 11  
**Read 2**: ch 1,4  
**Complete**:  
- Lab #6: worksheet (Due Oct 14th 11:59 pm) |
|---------------------|------------------------|-----------------------------------|--------------------------|
| Week 9: Oct 15th –21st | Models of Soil Formation 2) Organisms | Field: CPER, Nunn Chronosequence(#7) (Optional: collect samples) | **Read 2**: ch 5, 3  
**Complete**:  
- Quiz 4  
- Lab #7: Report (Due Oct 21st 11:59 pm) |
| Week 10: Oct 22nd –28th | Models of Soil Formation 3) Parent Material | Field: Environmental Learning Center—Final field assessment(#8) (Optional: collect samples) | **Read 7**  
**Complete**:  
- Lab #8 (Due Oct 28th 11:59 pm or in class Monday) |
| Week 11: Oct. 29th – Nov 4th | 4) Topography 5) Time | Class Ex Lab: Toposequence(#3)  
**Lab**:  
- % moisture; prep for %om and texture  
- Project topic & refs due | **Complete**:  
- Quiz 5  
- Lab #9 (Due Nov 4th 11:59 pm) |
| Week 12: Nov 5th –11th | 6) Humans  
Guest Lecture- NRCS (Wednesday) | Lab: Particle size distribution, pH, and BD | **Read 1**: Ch 15 |
| Week 13: Nov 12th –18th | **Distribute Exam Nov. 12th (Mon)**  
- Mass Balance | Library Rm.xxx- Final Project: Data Analysis | **Complete**:  
**Read**: Chadwick 1990  
- Assign 2: Mass Balance (Due Nov 18th 11:59 pm)  
Final Project: Prelim abstract and data plots (Due Nov 18th 11:59 pm)  
No Recitation |
| Week 14: Nov 19th –25th | FALL BREAK | FALL BREAK |  |
| Week 15: Nov 26th– Dec 2nd | Submit exams hard copy (Mon)  
- Land/soil judging | Library Rm.xxx- Final Project: Presentation Preparation | **Complete**:  
- Submit completed fieldtrip project handbook (Due Nov 30th 11:59 pm) |
| Week 16: Dec 3rd –7th | **Exit evaluation**  
**Final project presentations** | Final project presentations | **Complete**:  
**Final project presentations (Due Dec 7th 11:59 pm)** |

**Lab days will be held in Pl Sci W001**
Grading and Exam Policy
Everyone will receive access to exams and Assignments on the same day. I encourage you to make your best effort to submit all assignments and exams on time, but I understand that sometimes circumstances arise that are beyond your control.

- **Late Submissions**
  - Plan ahead. This syllabus lists all of the course assessments.
  - 10% of the work is deducted per day it is late up to 4 days at which time it will receive a zero.
    - Note that computer problems are not a valid excuse for late work
  - There will be no makeup assignments available for missed field labs

- **Make-up Exam Policy**
  - Make-up quizzes/exams will be permitted only under extenuating circumstances and only with prior notification and documentation (university excuse, original funeral notice, doctor note, etc.).
  - Students that miss an exam due to illness, family emergencies, or other University approved excuses will be able to make up exams by special arrangement
  - The instructor reserves the right to create alternate make-up exams for students who are not able to take the scheduled, on-campus exams.
  - Students who use alternative testing at RDS can contact me prior to the exam to make arrangements and sign applicable paperwork.
  - Please contact me ASAP if you miss an exam (preferably the day of the exam)

- **View your Grades**
  - Grades for assignments and quizzes will be posted within 2 weeks of CSU’s working days of the closing date of the assignment.
  - Grades for exams will be posted on Canvas within 1 week of CSU’s working days.

**Other Policies and Procedures**

**Special Needs** - Students having special needs as defined by the Americans with Disabilities Act should:
- Notify the Office of Disability Services early in the term. It is the student’s responsibility to contact the Disability Support Office to document disability prior to receiving services.
- Notify the instructor after you have contacted the Office of Disability Services to discuss what reasonable accommodations would be appropriate for your situation.

**Need Help? Rams Take Care of Rams**
- Reach out and ask for help if you or someone you know is having a difficult time. Always feel free to come and talk to me; I will always make myself available to help connect you with any resources you need. CSU is a community that cares for you. If you are struggling with drugs or alcohol and/or experiencing depression, anxiety, overwhelming stress or thoughts of hurting yourself or others please know there is help available. Counseling Services has trained professionals who can help. Contact 970-491-6053 or go to [http://health.colostate.edu](http://health.colostate.edu). If you are concerned about a friend or peer, tell someone by calling 970-491-1350 (or visit [http://safety.colostate.edu/tell-someone.aspx](http://safety.colostate.edu/tell-someone.aspx) ) to discuss your concerns with a professional who can discreetly connect the distressed individual with the proper resources. Rams take care of Rams.

**Academic Honesty:**
This course will adhere to the [Academic Integrity Policy](http://www.conflictresolution.colostate.edu/conduct-code.aspx#conduct) of the Colorado State University General Catalog, the Student Conduct Code, and University Principles of Community.
- Student Conduct Code: [http://www.conflictresolution.colostate.edu/conduct-code.aspx#conduct](http://www.conflictresolution.colostate.edu/conduct-code.aspx#conduct)
- Colorado State University General Catalog: [http://www.catalog.colostate.edu/](http://www.catalog.colostate.edu/)
- Each student's work must be the result of his/her own thought, research, or self-expression.
- Cheating includes, but is not limited to: copying the work of another person (plagiarism) or permitting your work to be copied by another person, discussing test answers or questions with people who have not completed the test, possessing course materials that have not been formally
released to students in the course, and collaborating on the completion of assignments not specifically designated in the syllabus as being group projects”.

- Cheating will be considered a breach of CSU's Code of Conduct Policy and may result in academic penalties (zero points on the assignment/test in question, a failing grade for the course), disciplinary action, and/or a referral to the Dean of Student Affairs. Examples 1) If it appears that two or more students have submitted the same material for any solo assignments, each student involved will receive zero points for that assignment. 2) If it appears that a student has copied published material (e.g. Internet sites), the student will receive zero points for that assignment.

Critical Event Procedure
- In the event of a school closing due to weather or other major event that might impact class schedules, the instructor will post an announcement indicating what changes, if any, the event will have on the course schedule and due dates.

Copyright
- The materials used in this course may be protected by copyright and are only for the use of students enrolled in this course for the purposes associated with this course and may not be retained or further disseminated.

Changes to the Syllabus
- The instructor reserves the right to make changes to this syllabus. In the event that changes become necessary, students will be notified in class and through Canvas.

Student Success Tips
In order to be successful in this course, you need to be organized and manage your time well so that you can complete all assessments on time. Make sure that you do not allow yourself to procrastinate, and that you communicate with the instructor or your classmates if you have any questions on any course materials or need assistance completing any assignments.

Principles of Community
In this course we strive to follow and extend Colorado State's University's Principles of Community, and welcome spirited discussion, lively debate and pursuit of knowledge in a manner that respects each of us as individuals.

The Principles of Community support the Colorado State University mission and vision of access, research, teaching, service and engagement. A collaborative and vibrant community is a foundation for learning, critical inquiry, and discovery. Therefore, each member of the CSU community has a responsibility to uphold these principles when engaging with one another and acting on behalf of the University.

Inclusion: We create and nurture inclusive environments and welcome, value and affirm all members of our community, including their various identities, skills, ideas, talents and contributions.

Integrity: We are accountable for our actions and will act ethically and honestly in all our interactions.

Respect: We honor the inherent dignity of all people within an environment where we are committed to freedom of expression, critical discourse, and the advancement of knowledge.

Service: We are responsible, individually and collectively, to give of our time, talents, and resources to promote the well-being of each other and the development of our local, regional, and global communities.
Social Justice: We have the right to be treated and the responsibility to treat others with fairness and equity, the duty to challenge prejudice, and to uphold the laws, policies and procedures that promote justice in all respects.

Classroom Etiquette
No animals are allowed in the classroom except those defined in the CSU policy regarding SERVICE animals (see pages _____ of this syllabus). No emotional support animals are allowed in class.

Please silence your phone and other electronic devices during class.

Please be quiet while in class. It can be difficult to hear in a large classroom and even quiet talking can be very disruptive to other students who are trying to listen.

Please do not read newspapers, text, play games, or listen to music during class. It may not impact your learning experience, but it is distracting to others in the room.