

Soils 361 - Forest Soils
Fall 2019
Les P. Werner

Office: Room 374 CNR
Telephone : 346-4189
Email : Les.Werner@uwsp.edu

Office Hours: Email or telephone for appointment

Course Description:

An examination of soil characteristics and processes observed in forested environments. Discussions and lab exercises will focus on describing the physical and chemical potential of the soil, soil forming processes under forested environments, soil as nutrient supplier, factors limiting to forest productivity and the influence of management practices on forest soils.

Course Objectives:

- Explain the important physical, chemical and biological properties and processes of forest soils as they relate to tree growth.
- Make basic inferences and interpretations concerning potential effects of various forest management practices on forest soils.
- Describe the effects of nutrient deficiencies and limitations in forest stands

Learner Outcomes

At the end of the semester students will be able to:

1. Describe the major forest soil types in Wisconsin
2. Describe the unique properties associated with soil formation under forested environments
3. Describe the role of soil in managing forest productivity
4. Describe the decomposition of forest litter and the major groups of organisms driving this process
5. Describe the impacts, potential and real, associated with various timber harvesting systems
6. Describe the impacts of fire on forest soils.

Class Times:

Lecture: Monday and Wednesday, 10:00 am Room 120 TNR
Lab: Tuesday, 3:00 – 4:50 pm Rooms 260 and 320 CNR

Text

Fisher, R.F. and D. Binkley. 2000. Ecology and management of forest soils. 4th Edition. John Wiley and Sons, New York. 489 pp.

Additional Readings (REQUIRED)

Peer reviewed, journal articles will be assigned to you over the course of the semester. These articles are meant to supplement lecture topics or provide the basis for the discussion of laboratory results. All articles are in a PDF format and will be located on the D2L site.

Attendance and Grading

Attendance is required for all laboratory exercises and field trips. Unexcused absences will result in a 3% deduction from your total grade per incidence. You will be responsible for all material presented in lecture and labs on the exams.

Grading

Exam I	25%
Exam II	25%
Exam III	25%
Report	25%

Letter grades will be assigned as follows:

90 – 100	A range
80 – 89	B range
70 – 79	C range
60 – 69	D range
< 60	Failing

The instructor reserves the right to adjust the grading scale downwards. Students will abide by University policy regarding academic conduct.

SOCIETY OF AMERICAN FORESTERS CODE OF ETHICS

Principles and Pledges

1. Foresters have a responsibility to manage land for both current and future generations. We pledge to practice and advocate management that will maintain the long-term capacity of the land to provide the variety of materials, uses, and values desired by landowners and society.
2. Society must respect forest landowners' rights and correspondingly, landowners have a land stewardship responsibility to society. We pledge to practice and advocate forest management in accordance with landowner objectives and professional standards, and to advise landowners of the consequences of deviating from such standards.
3. Sound science is the foundation of the forestry profession. We pledge to strive for continuous improvement of our methods and our personal knowledge and skills; to perform only those services for which we are qualified; and in the biological, physical, and social sciences to use the most appropriate data, methods, and technology.
4. Public policy related to forests must be based on both scientific principles and societal values. We pledge to use our knowledge and skills to help formulate sound forest policies and laws; to challenge and correct untrue statements about forestry; and to foster dialogue among foresters, other professionals, landowners, and the public regarding forest policies.
5. Honest and open communication, coupled with respect for information given in confidence, is essential to good service. We pledge to always present, to the best of our ability, accurate and complete information; to indicate on whose behalf any public statements are made; to fully disclose and resolve any existing or potential conflicts of interest; and to keep proprietary information confidential unless the appropriate person authorizes its disclosure.

Professional and civic behavior must be based on honesty, fairness, good will, and respect for the law. We pledge to conduct ourselves in a civil and dignified manner; to respect the needs, contributions, and viewpoints of others; and to give due credit to others for their methods, ideas, or assistance.

Forest Soils – Soils 361 – Fall 2019

Week	Date	Lecture Topic	Reading/Assignment
1	9-4	Introduction to the Course	Chapter 1
2	9-9	Forest Soils of the World	Chapter 2
	9-11	Forest Soils of the World	
3	9-16	Forest Soils of the World	
	9-18	Forest Soils of Wisconsin	
4	9-23	Forest Soil Development	Chapter 3
	9-25	Forest Soil Development	
5	9-30	Forest Soil Development	Chapter 4
	10-2	Forest Soil Development	
6	10-7	Forest Soil Development	Chapter 5
	10-9	Exam I	
7	10-14	Trees and Soil	Chapter 11
	10-16	Soil Chemistry and Nutrient Availability	Chapter 8
8	10-21	Soil Chemistry and Nutrient Availability	
	10-23	Biological Properties of Forest Soils	Chapter 6
9	10-28	Decomposition	
	10-30	Decomposition	
10	11-4	Decomposition	
	11-6	Decomposition and Nutrient Cycling	Chapter 7, Chapter 9
11	11-11	Decomposition and Nutrient Cycling	
	11-13	Exam II	
12	11-18	Soil Quality and Site Indexes	Chapter 11
	11-20	Harvesting Systems/Site Productivity	Chapter 12
13	11-25	Harvesting Systems/Site Productivity	
	11-27	Harvesting Systems/Site Productivity	
14	12-2	Fire and Forest Soils	Chapter 13
	12-4	Fire and Forest Soils	
15	12-9	Nutrient Management	Chapter 14
	12-11	Open	
Final	12-18	Wednesday, Exam III : 8:00 am	

Lab Schedule: 2019

Week	Date	Lab Topic	Location/Objective
1	9-3	No Lab	
2	9-10	O horizon and Soil Profile Description	Schmeekle
3	9-17	O horizon and Soil Profile Description	Rogers Property
4	9-24	O horizon Experiment – Set up	ACL
5	10-1	Sampling - Conifer Stand	Rogers
6	10-8	Sampling – Mixed/Hardwood Stand	Steinhaugen
7	10-15	Sample Processing/analysis Conifer	Lab 260
8	10-22	Sample Processing/analysis Mixed/Mixed	Lab 260
9	10-29	Soil Biology – Introduction	Lab 320
10	11-5	Soil Biology - Sample collection/Freezing	Lab 304
11	11-12	Report Preparation	Independent
12	11-19	Report Preparation	Independent
13	11-26	Forest Soils Disturbance Monitoring	Rogers Property
14	12-3	Overview - USFS Hierarchal Framework	Lab 320
15	12-10	Report Due	