

SOIL SCIENCE OPTION

This option is offered within the following major(s):

- Crop and Soil Science - College of Agricultural Sciences (<http://catalog.oregonstate.edu/college-departments/agricultural-sciences/crop-soil-science/crop-soil-science-bs-hbs/>)

Also available at LaGrande and via Ecampus.

The study of soil as a science provides students with a basic understanding of the physical, chemical, and biological properties of this essential natural resource. Soil is the fundamental substrate for life in terrestrial systems. Our food, fiber, and renewable energy are dependent on soils. Our understanding of soils is critical in the successful siting of buildings and construction of roadways and other transportation infrastructure. Our understanding of global and local ecology depends on an awareness of soil and its properties. Soils are the filters of our water and play active roles in storing carbon and other materials that are essential in human existence. As a soil science student, you will explore issues including water quality and management, organic crop production, erosion and sedimentation, land use and reclamation, and soil quality and sustainability. As a soil science professional you will be able to use your knowledge and skills to solve real-world, sustainable living problems in urban, agricultural, forest, rangeland, and other natural systems. Many soil scientists work for the Natural Resource Conservation Service. Some work for other federal, state, or local government agencies as extension educators, researchers, or surveyors. Others hold teaching or research positions in colleges and universities. Soil scientists also work for fertilizer companies, private research laboratories, environmental service companies, insurance companies, and land appraisal firms.

Option Code: 160

Code	Title	Credits
Agricultural Sciences		
ENT 311	INTRODUCTION TO INSECT PEST MANAGEMENT	4
SOIL 205 & SOIL 206 or CSS 205	SOIL SCIENCE and *SOIL SCIENCE LABORATORY FOR SOIL 205 *SOIL SCIENCE	4
BOT 331 or CROP 200 or HORT 301	PLANT PHYSIOLOGY CROP ECOLOGY AND MORPHOLOGY GROWTH AND DEVELOPMENT OF HORTICULTURAL CROPS	3-4
HORT 316 or SOIL 316	PLANT NUTRITION NUTRIENT CYCLING IN AGROECOSYSTEMS	4
Option Tracks		
Select one of the following tracks:		19-36
<i>Soils Research Track</i>		
GEO 201 or GEO 202 or GEO 203 or GEO 221 or GEO 101	*PHYSICAL GEOLOGY *EARTH SYSTEMS SCIENCE *EVOLUTION OF PLANET EARTH *ENVIRONMENTAL GEOLOGY *THE SOLID EARTH	
MTH 251	*DIFFERENTIAL CALCULUS	
PH 201 & PH 202	*GENERAL PHYSICS and *GENERAL PHYSICS	
SOIL 435	ENVIRONMENTAL SOIL PHYSICS	
SOIL 445	ENVIRONMENTAL SOIL CHEMISTRY	
SOIL 455	BIOLOGY OF SOIL ECOSYSTEMS	
SOIL 466	SOIL MORPHOLOGY AND CLASSIFICATION	
ST 351	INTRODUCTION TO STATISTICAL METHODS	
<i>General Soils Track</i>		
GEO 201	*PHYSICAL GEOLOGY	

or GEO 202	*EARTH SYSTEMS SCIENCE
or GEO 203	*EVOLUTION OF PLANET EARTH
or GEO 221	*ENVIRONMENTAL GEOLOGY
or GEO 101	*THE SOLID EARTH
MTH 112	*ELEMENTARY FUNCTIONS
or MTH 241	*CALCULUS FOR MANAGEMENT AND SOCIAL SCIENCE
or MTH 245	*MATHEMATICS FOR MANAGEMENT, LIFE, AND SOCIAL SCIENCES
SOIL 466	SOIL MORPHOLOGY AND CLASSIFICATION
ST 351	INTRODUCTION TO STATISTICAL METHODS
SOIL 366	ECOSYSTEMS OF WILDLAND SOILS
or SOIL 435	ENVIRONMENTAL SOIL PHYSICS
or SOIL 445	ENVIRONMENTAL SOIL CHEMISTRY
or SOIL 455	BIOLOGY OF SOIL ECOSYSTEMS

Soil Science Electives

Select a minimum of 12 credits from the following: 12

Nutrient Cycling

AEC 211	AGRICULTURAL AND FOOD MANAGEMENT
AEC 250	*INTRODUCTION TO ENVIRONMENTAL ECONOMICS AND POLICY
BOT 331	PLANT PHYSIOLOGY
BOT 547	NUTRIENT CYCLING
CH 130	GENERAL CHEMISTRY OF LIVING SYSTEMS
CROP 199	SPECIAL STUDIES: ISSUES IN SUSTAINABLE AGRICULTURE
FES 365	*ISSUES IN NATURAL RESOURCES CONSERVATION
FES 435/TOX 435	*GENES AND CHEMICALS IN AGRICULTURE: VALUE AND RISK
HORT 316	PLANT NUTRITION
RNG 341	RANGELAND ECOLOGY AND MANAGEMENT
SOIL 388	SOIL SYSTEMS AND PLANT GROWTH
SOIL 395	**WORLD SOIL RESOURCES
SOIL 525	MINERAL-ORGANIC MATTER INTERACTIONS
TOX 430	CHEMICAL BEHAVIOR IN THE ENVIRONMENT

Soil Biology/Ecology

ATS 564	INTERACTIONS OF VEGETATION AND ATMOSPHERE
BB 314	CELL AND MOLECULAR BIOLOGY
BI 311	GENETICS
BI 370	ECOLOGY
BOT 331	PLANT PHYSIOLOGY
BOT 332	LABORATORY TECHNIQUES IN PLANT BIOLOGY
BOT 341	PLANT ECOLOGY
CH 331	ORGANIC CHEMISTRY
CH 332	ORGANIC CHEMISTRY
FES 341	FOREST ECOLOGY
FES 435/TOX 435	*GENES AND CHEMICALS IN AGRICULTURE: VALUE AND RISK
MB 302	GENERAL MICROBIOLOGY
MB 303	GENERAL MICROBIOLOGY LABORATORY
MB 448	MICROBIAL ECOLOGY
SOIL 366	ECOSYSTEMS OF WILDLAND SOILS

Soil Hydrology

CE 412	HYDROLOGY
CE 413	GIS IN WATER RESOURCES
FE 430	WATERSHED PROCESSES
FE 434	FOREST WATERSHED MANAGEMENT
GEO 487	HYDROGEOLOGY
GEOG 340	*INTRODUCTION TO WATER SCIENCE AND POLICY
GEOG 360	GISCIENCE I: GEOGRAPHIC INFORMATION SYSTEMS AND THEORY
GEOG 441	THE WORLD'S WATER
MTH 251	*DIFFERENTIAL CALCULUS
MTH 252	INTEGRAL CALCULUS
PH 202	*GENERAL PHYSICS

2 Soil Science Option

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<i>Spatial Analysis/Land Use</i>	
AEC 250	*INTRODUCTION TO ENVIRONMENTAL ECONOMICS AND POLICY
FE 434	FOREST WATERSHED MANAGEMENT
FES 365	*ISSUES IN NATURAL RESOURCES CONSERVATION
GEO 432	APPLIED GEOMORPHOLOGY
GEOG 201	*FOUNDATIONS OF GEOSPATIAL SCIENCE AND GIS
GEOG 340	*INTRODUCTION TO WATER SCIENCE AND POLICY
GEOG 360	GISCIENCE I: GEOGRAPHIC INFORMATION SYSTEMS AND THEORY
GEOG 450	LAND USE IN THE AMERICAN WEST
HORT 414/CROP 414	PRECISION AGRICULTURE
PH 201	*GENERAL PHYSICS
PH 202	*GENERAL PHYSICS
RNG 341	RANGELAND ECOLOGY AND MANAGEMENT
SOIL 366	ECOSYSTEMS OF WILDLAND SOILS
<i>Sustainable Systems</i>	
AEC 250	*INTRODUCTION TO ENVIRONMENTAL ECONOMICS AND POLICY
BI 301	*HUMAN IMPACTS ON ECOSYSTEMS
BOT 350	INTRODUCTORY PLANT PATHOLOGY
CROP 199	SPECIAL STUDIES: ISSUES IN SUSTAINABLE AGRICULTURE
CROP 280	INTRODUCTION TO THE COMPLEXITY OF OREGON CROPPING SYSTEMS
CROP 300	CROP PRODUCTION IN PACIFIC NORTHWEST AGROECOSYSTEMS
CROP 310	FORAGE PRODUCTION
CROP 330	*WORLD FOOD CROPS
CROP 355	ORGANIC CERTIFICATION
CROP 420	SEED SCIENCE AND TECHNOLOGY
CROP 440	WEED MANAGEMENT
CROP 460	SEED PRODUCTION
CROP 480	CASE STUDIES IN CROPPING SYSTEMS MANAGEMENT
GEOG 300	*SUSTAINABILITY FOR THE COMMON GOOD
HORT 260	ORGANIC FARMING AND GARDENING
SOIL 360	SOIL MANAGEMENT FOR ORGANIC PRODUCTION
SOIL 499	SPECIAL TOPICS
Z 349	*BIODIVERSITY: CAUSES, CONSEQUENCES, AND CONSERVATION
<i>Water/Watershed Management</i>	
AEC 250	*INTRODUCTION TO ENVIRONMENTAL ECONOMICS AND POLICY
AEC 351	*NATURAL RESOURCE ECONOMICS AND POLICY
FE 430	WATERSHED PROCESSES
FE 434	FOREST WATERSHED MANAGEMENT
FES 365	*ISSUES IN NATURAL RESOURCES CONSERVATION
FW 326	INTEGRATED WATERSHED MANAGEMENT
GEO 322	SURFACE PROCESSES
GEOG 340	*INTRODUCTION TO WATER SCIENCE AND POLICY
PS 475	ENVIRONMENTAL POLITICS AND POLICY
RNG 355	DESERT WATERSHED MANAGEMENT
RNG 455	RIPARIAN ECOHYDROLOGY AND MANAGEMENT
SOIL 366	ECOSYSTEMS OF WILDLAND SOILS

Total Credits 46-64

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Baccalaureate Core Course (BCC)

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Writing Intensive Course (WIC)