

# PLANT BREEDING AND GENETICS 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/>)
- Horticulture - College of Agricultural Sciences (<http://catalog.oregonstate.edu/college-departments/agricultural-sciences/horticulture/horticulture-bs-hbs/>)

An interdisciplinary approach to applied plant breeding is the cornerstone of the Plant Breeding and Genetics option. After completing this degree, you will have gained fundamental knowledge in plant breeding that may be applied to a range of crops including annual and perennial horticultural crops, agronomic food and feed crops, and forestry products.

Graduates of the Plant Breeding and Genetics option often enter public or private sector breeding programs, or go on to attend graduate school.

## Active Learning

As a student studying Plant Breeding and Genetics, you'll gain practical experience in breeding and genetic analysis working in the greenhouse, field, and lab. You'll also be able to take advantage of OSU's extensive, cross-campus interdisciplinary plant science network and the Pacific Northwest's largest plant breeding program to explore your research interests.

You can get either a B.S. in Horticulture or a B.S. in Crop and Soil Science with an option in Plant Breeding and Genetics.

## Option Code: 785

Code	Title	Credits
<b>Plant Materials</b>		
Select one course from the following:		2-4
BOT 313	PLANT STRUCTURE	
BOT 321	PLANT SYSTEMATICS	
BOT 425	FLORA OF THE PACIFIC NORTHWEST	
CROP 200	CROP ECOLOGY AND MORPHOLOGY	
FES 241	DENDROLOGY	
HORT 226	LANDSCAPE PLANT MATERIALS I: DECIDUOUS HARDWOODS AND CONIFERS	
HORT 228	LANDSCAPE PLANT MATERIALS II: SPRING FLOWERING TREES AND SHRUBS	
HORT 251	TEMPERATE TREE FRUIT, BERRIES, GRAPES, AND NUTS	
HORT 255	HERBACEOUS ORNAMENTAL PLANT MATERIALS	
HORT 433/CROP 433	SYSTEMATICS AND ADAPTATION OF VEGETABLE CROPS	
<b>Ecology</b>		
Select one course from the following:		3-4
BI 370	ECOLOGY	
BOT 341	PLANT ECOLOGY	
HORT 318	*APPLIED ECOLOGY OF MANAGED ECOSYSTEMS	
<b>Technology</b>		
PBG 441	PLANT TISSUE CULTURE	4
<b>Agricultural Communication</b>		
CROP 407/HORT 407/ SOIL 407	SEMINAR	1
HORT 411	HORTICULTURE BOOK CLUB	1
Select one of the following Writing Intensive Courses:		3

BOT 323	*FLOWERING PLANTS OF THE WORLD	
HORT 318	*APPLIED ECOLOGY OF MANAGED ECOSYSTEMS	
<b>Capstone</b>		
PBG 450	PLANT BREEDING	4
<b>Science and Technology</b>		
CROP 463/HORT 463	SEED BIOLOGY	3
PBG 430	PLANT GENETICS	3
ST 351	INTRODUCTION TO STATISTICAL METHODS	4
<b>Production and Technology</b>		
Select three courses from the following, for a minimum of 9 credits:		9
BOT 332	LABORATORY TECHNIQUES IN PLANT BIOLOGY	
CROP 199	SPECIAL STUDIES: ISSUES IN SUSTAINABLE AGRICULTURE	
CROP 280	INTRODUCTION TO THE COMPLEXITY OF OREGON CROPPING SYSTEMS	
CROP 310	FORAGE PRODUCTION	
CROP 330	*WORLD FOOD CROPS	
CROP 460	SEED PRODUCTION	
CROP 590	EXPERIMENTAL DESIGN IN AGRICULTURE	
CSS 320	PRINCIPLES OF OIL AND FIBER CROP PRODUCTION	
CSS 321	PRINCIPLES OF CEREAL CROP PRODUCTION	
CSS 322	PRINCIPLES OF POTATO PRODUCTION	
HORT 260	ORGANIC FARMING AND GARDENING	
HORT 300/CROP 300	CROP PRODUCTION IN PACIFIC NORTHWEST AGROECOSYSTEMS	
HORT 351	FLORICULTURE AND GREENHOUSE SYSTEMS	
HORT 360	IRRIGATION AND DRAINAGE	
HORT 361	PLANT NURSERY SYSTEMS	
HORT 421	HERBS, SPICES, AND MEDICINAL PLANTS	
HORT 444/ENT 444	INSECT AGROECOLOGY	
HORT 452	BERRY AND GRAPE PHYSIOLOGY AND CULTURE	
HORT 453	GRAPEVINE GROWTH AND PHYSIOLOGY	
HORT 454	PRINCIPLES AND PRACTICES OF VINEYARD PRODUCTION	
HORT 456	PHYSIOLOGY AND PRODUCTION OF BERRY CROPS	
MB 302	GENERAL MICROBIOLOGY	
MB 303	GENERAL MICROBIOLOGY LABORATORY	
SOIL 316	NUTRIENT CYCLING IN AGROECOSYSTEMS	
<b>Plant Synthesis</b>		
HORT 480/CROP 480 or HORT 481	CASE STUDIES IN CROPPING SYSTEMS MANAGEMENT HORTICULTURE PRODUCTION CASE STUDIES	4
<b>Ecology and Sustainability Ecosystems Courses</b>		
Meets Synthesis Requirements. Each course must be from a different department		
<i>Contemporary Global Issues</i>		
Select one course from the following:		3-4
AEC 351	*NATURAL RESOURCE ECONOMICS AND POLICY	
AEC 352/ECON 352	*ENVIRONMENTAL ECONOMICS AND POLICY	
BI 301	*HUMAN IMPACTS ON ECOSYSTEMS	
CROP 330	*WORLD FOOD CROPS	
FES 365	*ISSUES IN NATURAL RESOURCES CONSERVATION	
FW 325	*GLOBAL CRISES IN RESOURCE ECOLOGY	
GEOG 300	*SUSTAINABILITY FOR THE COMMON GOOD	
GEOG 330	*GEOGRAPHY OF INTERNATIONAL DEVELOPMENT AND GLOBALIZATION	
HORT 331/ENT 331	*POLLINATORS IN PERIL	
SUS 350	*SUSTAINABLE COMMUNITIES	
WSE 470	*FORESTS, WOOD, AND CIVILIZATION	
Z 349	*BIODIVERSITY: CAUSES, CONSEQUENCES, AND CONSERVATION	
<i>Science, Technology and Society</i>		
Select one course from the following:		3-4
AGRI 411	*INTRODUCTION TO FOOD SYSTEMS: LOCAL TO GLOBAL	

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ANS 315	*CONTENTIOUS SOCIAL ISSUES IN ANIMAL AGRICULTURE	
BI 348	*HUMAN ECOLOGY	
BOT 324	*FUNGI IN SOCIETY	
CH 374	*TECHNOLOGY, ENERGY, AND RISK	
ENGR 350	*SUSTAINABLE ENGINEERING	
ENGR 363	*ENERGY MATTERS	
ENSC 479	**ENVIRONMENTAL CASE STUDIES	
FES 435/TOX 435	*GENES AND CHEMICALS IN AGRICULTURE: VALUE AND RISK	
FES 477/NR 477	*AGROFORESTRY	
FES 485	*CONSENSUS AND NATURAL RESOURCES	
FST 421	*FOOD LAW	
FW 470	*ECOLOGY AND HISTORY: LANDSCAPES OF THE COLUMBIA BASIN	
GEOG 300	*SUSTAINABILITY FOR THE COMMON GOOD	
GEOG 340	*INTRODUCTION TO WATER SCIENCE AND POLICY	
HEST 310	*INTRO TO COMMUNITY ENGAGEMENT AND COMMUNITY-BASED DESIGN	
HORT 330/ENT 300	*PLAGUES, PESTS, AND POLITICS	
HST 481	*ENVIRONMENTAL HISTORY OF THE UNITED STATES	
HSTS 421	*TECHNOLOGY AND CHANGE	
NUTR 312	*ISSUES IN NUTRITION AND HEALTH	
PH 313	*ENERGY ALTERNATIVES	
PHL 325	*SCIENTIFIC REASONING	
PS 476	*SCIENCE AND POLITICS	
SOIL 395	**WORLD SOIL RESOURCES	
SUS 304	*SUSTAINABILITY ASSESSMENT	
Total Credits		47-52

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Baccalaureate Core Course (BCC)

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Writing Intensive Course (WIC)

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Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
CH 121	GENERAL CHEMISTRY	5
HORT 112	INTRODUCTION TO HORTICULTURAL SYSTEMS, PRACTICES AND CAREERS	2
WR 121	*ENGLISH COMPOSITION	3
Math course		4
Credits		14
<b>Winter</b>		
CH 122	*GENERAL CHEMISTRY	5
COMM 211	*COMMUNICATING ONLINE	3
SOIL 205	SOIL SCIENCE	3
SOIL 206	*SOIL SCIENCE LABORATORY FOR SOIL 205	1
Bacc Core: Perspectives course		3-4
Credits		15-16
<b>Spring</b>		
CH 123	*GENERAL CHEMISTRY	5
HHS 231	*LIFETIME FITNESS FOR HEALTH	2
HHS 241	*LIFETIME FITNESS	1
Bacc Core: Writing II course		3
Plant Materials course		2-4
Electives		0-2
Credits		13-17

Second Year

<b>Fall</b>		
BI 211	*PRINCIPLES OF BIOLOGY	4
Horticultural Production elective		3-4
Bacc Core: Perspectives course		3-4
Electives		3-5
Credits		13-17

Winter

BI 212	*PRINCIPLES OF BIOLOGY	4
HORT 316	PLANT NUTRITION	4
HORT 318	*APPLIED ECOLOGY OF MANAGED ECOSYSTEMS	3
Bacc Core: Perspectives course		3-4
Electives		0-1
Credits		14-16

Spring

BI 213	*PRINCIPLES OF BIOLOGY	4
Horticultural Production elective		3-4
Bacc Core: Perspectives		3-4
Bacc Core: Perspectives		3-4
Electives		0-2
Credits		13-18

Third Year

<b>Fall</b>		
HORT 301	GROWTH AND DEVELOPMENT OF HORTICULTURAL CROPS	3
ST 351	INTRODUCTION TO STATISTICAL METHODS	4
Bacc Core: Synthesis course		3-4
Electives		4-5
Credits		14-16

Winter

BOT 331	PLANT PHYSIOLOGY	4
HORT 311	PLANT PROPAGATION	4
HORT 412	CAREER EXPLORATION: INTERNSHIPS AND RESEARCH PROJECTS	1
PBG 430	PLANT GENETICS	3
Electives		3
Credits		15

Spring

ENT 311	INTRODUCTION TO INSECT PEST MANAGEMENT	4
PBG 450	PLANT BREEDING	4
Bacc Core: Synthesis course		3-4
Electives		3-4
Credits		14-16

Fourth Year

<b>Fall</b>		
BOT 350	INTRODUCTORY PLANT PATHOLOGY	4
CROP 440	WEED MANAGEMENT	4
HORT 463	SEED BIOLOGY	3
Electives		4
Credits		15

Winter

PBG 441	PLANT TISSUE CULTURE	4
HORT 411	HORTICULTURE BOOK CLUB	1
Horticultural Production elective		3-4
Electives		6-7
Credits		14-16

Spring

HORT 407	SEMINAR	1
HORT 480	CASE STUDIES IN CROPPING SYSTEMS MANAGEMENT	4
or HORT 481	or HORTICULTURE PRODUCTION CASE STUDIES	
PBG 410	INTERNSHIP	6

Electives	4
Credits	15
Total Credits	169-191