

HORTICULTURAL RESEARCH OPTION

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

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

The Horticultural Research option is designed for students interested in graduate school and a career in academic or industrial research. It provides an excellent foundation in the natural sciences and horticulture and accommodates the specific interests of each student. Graduates of this program will be critical thinkers, and experienced technical communicators. They will be skilled in finding and using information, as well as synthesizing information from many sources to analyze novel situations and solve problems.

The relationship between the student and the research mentor is a key feature of this program. The mentor will assist the student in choosing upper-division classes that match the student's interests. Each student also completes a research project under the guidance of his or her mentor and writes an undergraduate thesis. Students can work with horticulture researchers on the OSU campus or at research institutions of their choosing. Our undergraduates have been welcomed at other universities and at local research institutions including the United States Department of Agriculture-Agricultural Research Service laboratories, the National Clonal Germplasm Repository in Corvallis, the Corvallis Plant Materials Center of the National Resources Conservation Service, and the North Willamette Research and Extension Center.

In addition to the required Horticulture major Core courses, students in this proposed option will complete the following courses:

Code	Title	Hours
Plant Materials		
Select one of 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	
Ecology		
Select one of the following:		3-4
BI 370	ECOLOGY	
BOT 341	PLANT ECOLOGY	
HORT 318	^APPLIED ECOLOGY OF MANAGED ECOSYSTEMS	
Technology		

Select one of the following: 4

HORT 414/ CROP 414	PRECISION AGRICULTURE	
PBG 441	PLANT TISSUE CULTURE	

Horticultural Communication

HORT 406/BRR 406 PROJECTS: DATA PRESENTATIONS 1

HORT 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

Capstone

Select one of the following: 3-4

HORT 452 BERRY AND GRAPE PHYSIOLOGY AND CULTURE

HORT 453 GRAPEVINE GROWTH AND PHYSIOLOGY

HORT 454 PRINCIPLES AND PRACTICES OF VINEYARD PRODUCTION

HORT 463/
CROP 463 SEED BIOLOGY

HORT 481 HORTICULTURE PRODUCTION CASE STUDIES

PBG 450 PLANT BREEDING

Advanced Horticultural Science

PBG 430 PLANT GENETICS 3

Math and Science Foundation

MTH 251 *DIFFERENTIAL CALCULUS 4

MTH 252 INTEGRAL CALCULUS 4

ST 351 INTRODUCTION TO STATISTICAL METHODS 4

Select 3 of the following courses:

BB 350 ELEMENTARY BIOCHEMISTRY

CH 331 ORGANIC CHEMISTRY

CH 332 ORGANIC CHEMISTRY

PH 201 *GENERAL PHYSICS

PH 202 *GENERAL PHYSICS

Select 12 credits of upper-division Horticulture and Life Science courses with approval of research mentor and advisor 12

Ecology and Sustainability Ecosystems Courses

Meets Synthesis requirements. Each course must be from a different department.

Contemporary Global Issues

Select one of 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 of the following:		3-4
AGRI 411	*INTRODUCTION TO FOOD SYSTEMS: LOCAL TO GLOBAL	
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	
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 Hours		51-57

- * Baccalaureate Core Course (BCC)
- ^ Writing Intensive Course (WIC)

Option Code: 614

Course	Title	Hours
First Year		
Fall		
CH 121	GENERAL CHEMISTRY	5
HORT 112	INTRODUCTI TO HORTICULT SYSTEMS, PRACTICES AND CAREERS	2
MTH 112	*ELEMENTARY FUNCTIONS	4

WR 121	*ENGLISH COMPOSITIK	3
		Hours 14
Winter		
CH 122	*GENERAL CHEMISTRY	5
COMM 211	*COMMUNICATING ONLINE	3
SOIL 205	SOIL SCIENCE	3
SOIL 206	*SOIL SCIENCE LABORATORY FOR SOIL 205	1
MTH 251	*DIFFERENT CALCULUS	4
		Hours 16
Spring		
CH 123	*GENERAL CHEMISTRY	5
HHS 231	*LIFETIME FITNESS FOR HEALTH	2
HHS 241	*LIFETIME FITNESS	1
MTH 252	INTEGRAL CALCULUS	4
Bacc Core Writing II Course		3
		Hours 15
Second Year		
Fall		
BI 211	*PRINCIPLE: OF BIOLOGY	4
CH 331	ORGANIC CHEMISTRY	4
Plant Materials Course		2-4
Perspectives course		3-4
Electives		0-2
		Hours 13-18
Winter		
BI 212	*PRINCIPLE: OF BIOLOGY	4
CH 332	ORGANIC CHEMISTRY	4
HORT 316	PLANT NUTRITION	4
HORT 318	*APPLIED ECOLOGY OF MANAGED ECOSYSTEMS	3
		Hours 15
Spring		
BB 350	ELEMENTARY BIOCHEMISTRY	4
BI 213	*PRINCIPLE: OF BIOLOGY	4
Perspectives course		3-4
Electives		3-4
		Hours 14-16

Third Year

Fall		
HORT 301	GROWTH AND DEVELOPMENT OF HORTICULTURAL CROPS	3
ST 351	INTRODUCTION TO STATISTICAL METHODS	4
Perspectives course		3-4
Upper-division HORT/Life Sciences elective		3-4
		Hours 13-15

Winter

BOT 331	PLANT PHYSIOLOGY	4
HORT 311	PLANT PROPAGATION	4
HORT 406	PROJECTS: DATA PRESENTATIONS	1
HORT 412	CAREER EXPLORATION INTERNSHIP AND RESEARCH PROJECTS	1
PBG 430	PLANT GENETICS	3
Electives		2
		Hours 15

Spring

ENT 311	INTRODUCTION TO INSECT PEST MANAGEMENT	4
Upper-division HORT/Life Sciences elective		3-4
Upper-division HORT/Life Sciences elective		3-4
Perspectives course		3-4
Electives		0-2
		Hours 13-18

Fourth Year

Fall		
BOT 350	INTRODUCTION TO PLANT PATHOLOGY	4
CROP 440	WEED MANAGEMENT	4
Synthesis course		3-4
Perspectives course		3-4
		Hours 14-16

Winter

HORT 411	HORTICULTURE BOOK CLUB	1
PBG 441	PLANT TISSUE CULTURE	4
Synthesis course		3-4
Upper-division HORT/Life Sciences elective		3-4
Electives		2-4
		Hours 13-17

Spring

HORT 403	THESIS	6
HORT 407	SEMINAR	1

HORT 481	HORTICULTURE PRODUCTION CASE STUDIES	4
Capstone		3-4
		Hours 14-15
		Total Hours 169-190