

# 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/or a career in academic or industrial research. It provides you with an excellent foundation in the natural sciences and horticulture, and accommodates your specific research interests. Your studies will involve you in critical thinking, and allow you to seek out, synthesize, and apply information from many sources to analyze novel situations and solve problems.

You will complete a research project under the guidance of a faculty mentor, and will write an undergraduate thesis. Many theses focus on problems and challenges found in Oregon horticulture and provide Oregonians with innovative solutions.

Recent graduates have gone on to Masters and Ph.D. programs at Oregon State, U.C. Davis and Cornell University, received a Fulbright Scholarship to study abroad and have studied diverse topics such as plant breeding, green roof technology, entomology, and weed science.

## Active Learning

Our undergraduates have worked 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. With your faculty mentor, you'll determine the best setting for your research.

For more information, visit the Horticulture website (<https://horticulture.oregonstate.edu/horticulture/students/undergraduate-students/>).

## Option Code: 614

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

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>		
Select one course from the following:		4
HORT 414/CROP 414	PRECISION AGRICULTURE	
PBG 441	PLANT TISSUE CULTURE	
<b>Horticultural Communication</b>		
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	
<b>Capstone</b>		
Select one course from 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	
<b>Advanced Horticultural Science</b>		
PBG 430	PLANT GENETICS	3
<b>Math and Science Foundation</b>		
MTH 251	*DIFFERENTIAL CALCULUS	4
MTH 252	INTEGRAL CALCULUS	4
ST 351	INTRODUCTION TO STATISTICAL METHODS	4
Select three courses from the following:		
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
<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	
ANS 315	*CONTENTIOUS SOCIAL ISSUES IN ANIMAL AGRICULTURE	
BI 348	*HUMAN ECOLOGY	

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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 Credits 51-57

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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
MTH 112	*ELEMENTARY FUNCTIONS	4
WR 121	*ENGLISH COMPOSITION	3
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
MTH 251	*DIFFERENTIAL CALCULUS	4
Credits		16
<b>Spring</b>		
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
Credits		15
<b>Second Year</b>		
<b>Fall</b>		
BI 211	*PRINCIPLES OF BIOLOGY	4
CH 331	ORGANIC CHEMISTRY	4
Plant Materials Course		2-4
Perspectives course		3-4

Electives	0-2
Credits	13-18

<b>Winter</b>		
BI 212	*PRINCIPLES OF BIOLOGY	4
CH 332	ORGANIC CHEMISTRY	4
HORT 316	PLANT NUTRITION	4
HORT 318	*APPLIED ECOLOGY OF MANAGED ECOSYSTEMS	3
Credits		15

<b>Spring</b>		
BB 350	ELEMENTARY BIOCHEMISTRY	4
BI 213	*PRINCIPLES OF BIOLOGY	4
Perspectives course		3-4
Electives		3-4
Credits		14-16

<b>Third Year</b>		
<b>Fall</b>		
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
Credits		13-15

<b>Winter</b>		
BOT 331	PLANT PHYSIOLOGY	4
HORT 311	PLANT PROPAGATION	4
HORT 406	PROJECTS: DATA PRESENTATIONS	1
HORT 412	CAREER EXPLORATION: INTERNSHIPS AND RESEARCH PROJECTS	1
PBG 430	PLANT GENETICS	3
Electives		2
Credits		15

<b>Spring</b>		
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
Credits		13-18

<b>Fourth Year</b>		
<b>Fall</b>		
BOT 350	INTRODUCTORY PLANT PATHOLOGY	4
CROP 440	WEED MANAGEMENT	4
Synthesis course		3-4
Perspectives course		3-4
Credits		14-16

<b>Winter</b>		
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
Credits		13-17

<b>Spring</b>		
HORT 403	THESIS	6
HORT 407	SEMINAR	1
HORT 481	HORTICULTURE PRODUCTION CASE STUDIES	4
Capstone		3-4
Credits		14-15
Total Credits		169-190