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)

Also available at Eastern Oregon University.

The Plant Breeding and Genetics (PBG) option at Oregon State University embodies the Land Grant mission of integrated research, teaching and extension in the context of cultivar development and fundamental genetics. Plant breeding is a collaborative discipline spanning everything from classical field approaches to gene manipulation at the molecular level. Breeders regularly cooperate with pathologists, entomologists, soil scientists, physiologists, food scientists, genomicsists, molecular biologists and experts in other fields.

Students in the Plant Breeding and Genetics option will learn an interdisciplinary approach to applied plant breeding by taking courses across a broad spectrum of disciplines. The option may be tailored to meet students’ career goals including graduate school, as well as directly entering public or private sector breeding programs. After completing their degree, students will have gained fundamental knowledge in plant breeding that may be applied in a range of crops including annual and perennial horticultural crops, agronomic food and feed crops, and forestry products.

This option is under both the Crop and Soil Science major and the Horticulture major. The option uses the new horticulture major core.

### Code | Title | Hours
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#### 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, GRAPEVES, AND NUTS

**HORT 255** HERBACEOUS ORNAMENTAL PLANT MATERIALS

**HORT 433** SYSTEMATICS AND ADAPTATION OF VEGETABLE CROPS

**CROP 433**

#### Ecology
Select one of the following: 3-4

**BI 370** ECOLOGY

**BOT 341** PLANT ECOLOGY

**HORT 318** *APPLIED ECOLOGY OF MANAGED ECOSYSTEMS

#### Technology

**PBG 441** PLANT TISSUE CULTURE 4

**Agricultural Communication**

**CROP 407** SEMINAR 1

or **HORT 407** SEMINAR

or **SOIL 407** SEMINAR

**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

**PBG 450** PLANT BREEDING 4

#### Science and Technology

**CROP 463/HORT 463** SEED BIOLOGY 3

**PBG 430** PLANT GENETICS 3

**ST 351** INTRODUCTION TO STATISTICAL METHODS 4

#### Production and Technology

Select 3 of the following courses, for 9 credits minimum: 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/HORT 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

#### Plant Synthesis

**HORT 480/CROP 480** CASE STUDIES IN CROPPING SYSTEMS MANAGEMENT 4

or **HORT 481** HORTICULTURE PRODUCTION CASE STUDIES
### 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  *NATIONAL 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 CRISIS IN RESOURCE ECOLOGY*
- GEOG 300  *SUSTAINABILITY FOR THE COMMON GOOD*
- GEOG 330  **GEOGRAPHY OF INTERNATIONAL DEVELOPMENT AND GLOBALIZATION**
- HORT 331/ ENT 331  *POLLENATORS IN PERIL*
- SUS 350  *SUSTAINABLE COMMUNITIES*
- WSE 470  *FORESTS, WOOD, AND CIVILIZATION*
- Z 349  *BIODIVERSITY: CAUSES, CONSEQUENCES, AND CONSERVATION*

#### Science, Technology and Society
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*
- 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*

### Science, Technology and Society
Select one of the following: 3-4

- PS 476  *SCIENCE AND POLITICS*
- SOIL 395  *WORLD SOIL RESOURCES*
- SUS 304  *SUSTAINABILITY ASSESSMENT*

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**Total credits required for graduation**: 180

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

### Option Code: 785

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**Plant Materials course**

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**Horticultural Production elective**

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**Bacc Core: Perspectives course**

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<td>HORT 311</td>
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**Spring**

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**Four Year**

**Fall**

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