

# PLANT BREEDING AND PLANT GENETICS, PHD

## REQUIREMENTS

### MINIMUM GRADUATE SCHOOL REQUIREMENTS

Review the Graduate School minimum degree requirements (<https://guide.wisc.edu/graduate/#requirements>) and policies (<https://guide.wisc.edu/graduate/#policies>), in addition to the program requirements listed below.

### MAJOR REQUIREMENTS

#### MODE OF INSTRUCTION

| Face to Face | Evening/<br>Weekend | Online | Hybrid | Accelerated |
|--------------|---------------------|--------|--------|-------------|
| Yes          | No                  | No     | No     | No          |

#### Mode of Instruction Definitions

**Accelerated:** Accelerated programs are offered at a fast pace that condenses the time to completion. Students typically take enough credits aimed at completing the program in a year or two.

**Evening/Weekend:** Courses meet on the UW-Madison campus only in evenings and/or on weekends to accommodate typical business schedules. Students have the advantages of face-to-face courses with the flexibility to keep work and other life commitments.

**Face-to-Face:** Courses typically meet during weekdays on the UW-Madison Campus.

**Hybrid:** These programs combine face-to-face and online learning formats. Contact the program for more specific information.

**Online:** These programs are offered 100% online. Some programs may require an on-campus orientation or residency experience, but the courses will be facilitated in an online format.

### CURRICULAR REQUIREMENTS

#### Requirement Detail

|                                         |                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Minimum Credit Requirement              | 51 credits                                                                                                                                                                                                                                                                                                                           |
| Minimum Residence Credit Requirement    | 32 credits                                                                                                                                                                                                                                                                                                                           |
| Minimum Graduate Coursework Requirement | 26 credits must be graduate-level coursework. Refer to the Graduate School: Minimum Graduate Coursework (50%) Requirement policy: <a href="https://policy.wisc.edu/library/UW-1244">https://policy.wisc.edu/library/UW-1244</a> ( <a href="https://policy.wisc.edu/library/UW-1244/">https://policy.wisc.edu/library/UW-1244/</a> ). |
| Overall Graduate GPA Requirement        | 3.00 GPA required. Refer to the Graduate School: Grade Point Average (GPA) Requirement policy: <a href="https://policy.wisc.edu/library/UW-1203">https://policy.wisc.edu/library/UW-1203</a> ( <a href="https://policy.wisc.edu/library/UW-1203/">https://policy.wisc.edu/library/UW-1203/</a> ).                                    |

**Other Grade Requirements** PhD candidates should maintain a 3.0 GPA in all core curriculum courses and may not have any more than two Incompletes on their record at any one time.

**Assessments and Examinations** Doctoral students must pass both the oral preliminary and final thesis exams.

Doctoral students must pass two exams to advance to candidacy.

- The first is a written qualifying exam which tests a student's breadth of knowledge in plant science. Students must attempt the qualifying exam within the first two years of enrolling in the PhD program.
- The second is an oral preliminary exam which allows the student's thesis committee to critique their research proposal and test the student's knowledge base for the proposed research. Students must also pass a final thesis defense and exam.

**Language Requirements** No language requirements.

**Graduate School Breadth Requirements** The doctoral minor or graduate/professional certificate is not required for students in the Plant Breeding and Plant Genetics degree. Students who wish to complete a cohesive body of work outside the major may wish to obtain a doctoral minor or graduate/professional certificate, and should declare them at the certification meeting. Requirements are determined by the minor or certificate department or program.

### REQUIRED COURSES

The specific program of study toward a doctoral degree is developed by the student and their major professor. Considerable flexibility in the selection of courses is permitted to meet the needs and interests of the candidate.

| Code                                                                                                                                                                                                                                                                                              | Title                                              | Credits |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|---------|
| <b>Coursework</b>                                                                                                                                                                                                                                                                                 |                                                    |         |
| Chosen in consultation with advisor, students must complete at least 17 credits of coursework, including 11 credits of core curriculum coursework. Research (990) credits cannot be applied toward this requirement. This coursework must be graded (no pass-fail or satisfactory-unsatisfactory) |                                                    | 17      |
| <i>Core Curriculum</i>                                                                                                                                                                                                                                                                            |                                                    |         |
| Students must complete at least 11 credits from the core curriculum, including 2 credits from section A, B and C. Students may fulfill the remaining 5 credits by completing courses in any of the sections (A, B, C or D).                                                                       |                                                    |         |
| Section A. Plant Breeding (minimum 2 credits)                                                                                                                                                                                                                                                     |                                                    |         |
| PLANTSCI 501                                                                                                                                                                                                                                                                                      | Principles of Plant Breeding                       |         |
| PLANTSCI 502                                                                                                                                                                                                                                                                                      | Techniques of Plant Breeding <sup>1</sup>          |         |
| PLANTSCI 812                                                                                                                                                                                                                                                                                      | Selection Theory for Quantitative Traits in Plants |         |
| Section B. Genetics (minimum 2 credits)                                                                                                                                                                                                                                                           |                                                    |         |
| PL PATH 517                                                                                                                                                                                                                                                                                       | Plant Disease Resistance                           |         |
| PLANTSCI 550                                                                                                                                                                                                                                                                                      | Molecular Approaches for Crop Improvement          |         |

|                                     |                                               |
|-------------------------------------|-----------------------------------------------|
| PLANTSCI/<br>GENETICS 615           | Genetic Mapping                               |
| GENETICS/<br>BIOCHEM 631            | Plant Genetics and Development                |
| GENETICS/<br>BIOCHEM/<br>BOTANY 840 | Regulatory Mechanisms in Plant<br>Development |

Section C. Quantitative Genetics and Biometry (minimum  
2 credits)

|                                |                                                                                   |
|--------------------------------|-----------------------------------------------------------------------------------|
| F&W ECOL/<br>STAT 572          | Statistical Methods for Bioscience II                                             |
| PLANTSCI 811                   | Biometrical Procedures in Plant<br>Breeding                                       |
| PLANTSCI 771<br>& PLANTSCI 772 | Experimental Design and Analysis<br>and Applications in ANOVA and<br>Mixed Models |
| AN SCI 865                     | Design and Analysis of Biological<br>Studies                                      |

Section D. Additional Courses

|                                  |                                                                 |
|----------------------------------|-----------------------------------------------------------------|
| PL PATH/<br>BOTANY/<br>ENTOM 505 | Plant-Microbe Interactions:<br>Molecular and Ecological Aspects |
| BIOCHEM/<br>BOTANY 621           | Plant Biochemistry                                              |
| GENETICS 633                     | Population Genetics                                             |
| BOTANY 500                       | Plant Physiology                                                |

**Seminar <sup>2</sup>**

Students must complete 3 credits of seminar by taking the  
following course three times. 3

|              |                                                 |
|--------------|-------------------------------------------------|
| PLANTSCI 957 | Seminar in Plant Breeding and Plant<br>Genetics |
|--------------|-------------------------------------------------|

**Additional Coursework**

Students must complete 31 credits of additional  
coursework to satisfy the 51-credit minimum requirement. 31  
Courses are chosen in consultation with advisor and may  
be a combination of research and/or courses related to a  
student's needs and interests.

*Research*

Research (990) credits may be applied towards degree  
requirements. Students will register for research credits in  
the home department of their faculty advisor.

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**Total Credits 51**

<sup>1</sup> Students who complete this course must complete a second course in  
Section A to satisfy the 2-credit requirement.

<sup>2</sup> With committee approval, students may substitute 1-credit of seminar  
with a different graduate-level seminar class.