

# Plant Sciences

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## Department Information

- **Department Head:**  
Richard Horsley, Ph.D.
- **Graduate Coordinator:**  
Edward Deckard, Ph.D.
- **Department Location:**  
166 Loftsgard Hall
- **Department Phone:**  
(701) 231-7971
- **Department Web Site:**  
[www.ag.ndsu.edu/plantsciences/](http://www.ag.ndsu.edu/plantsciences/) (<http://www.ag.ndsu.edu/plantsciences/>)
- **Application Deadline:**  
International applications must be completed with the Graduate School by October 1 for spring, March 1 for summer, and May 1 for fall. • Domestic applications should be completed with the Graduate School at least 2 months prior to the start of classes.
- **Credential Offered:**  
Ph.D., M.S.
- **English Proficiency Requirements:**  
TOEFL iBT 71, IELTS 6; Duolingo 105

The Department of Plant Sciences offers specialized academic and research training in plant breeding and genetics, weed science, biotechnology, and field and forage crop production and management leading to the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees in Plant Science with an optional Ph.D. subplan in Plant Breeding and Genetics.

The programs are designed for students looking for a full-time, hands-on research experience in state-of-the-art laboratories and field plots across the state. The Dalrymple Research Greenhouse, extensive growth chamber facilities, and 600 acres of field research land located near the North Dakota State University campus allow our faculty and research technicians to build a program unlike any other in the region.

NDSU College of Agriculture, Food Systems, and Natural Resources is currently constructing the 85 million-dollar Peltier Complex to enhance collaborative work with such agricultural programs as Cereal Science without stepping outside. Excellent supporting coursework is offered just steps away from our home building, Loftsgard Hall, in biology, entomology, genomics/bioinformatics, microbiology, plant pathology, soils, and statistics. Our open curriculum guidelines allow students to tailor their academic and research programs to meet their interests and achieve their career goals.

Graduate student numbers per faculty member are limited, so the student gets adequate personal attention and works closely with their advisor in research. Final selection of the advisor will be made on the basis of the student's interest, availability of space in the researcher's laboratory, and a common desire of the student and professor to work together.

## Admission Requirements

Plant Science graduate programs are open to all qualified graduates of universities and colleges of recognized standing. Applications must be submitted directly to the NDSU Graduate School. To be admitted with full status to the program, the applicant must meet Graduate School and department admission requirements.

### B.S. to M.S. and M.S. to Ph.D. Eligibility

For admission requirements visit <https://www.ndsu.edu/gradschool/apply> (<https://www.ndsu.edu/gradschool/apply/>)

### B.S. to Ph.D. Eligibility

For admission requirements visit <https://www.ndsu.edu/gradschool/apply> (<https://www.ndsu.edu/gradschool/apply/>)

Additionally, at the time of application, the applicant must:

- Have or be working toward a B.S. degree in the same or a closely-related field
- Have a cumulative GPA of 3.70 or greater

Additionally, applicants interested in the B.S. to Ph.D. track must:

- Use the Statement of Purpose portion of the application to succinctly describe qualifications for applying to the Ph.D. program as an undergraduate student, including describing preparation for an advanced degree in the chosen area of study and detailing a focused research interest

- Use the Statement of Purpose to identify a Department of Plant Sciences faculty member who has shown definite, written interest in serving as advisor and providing financial and academic support of Ph.D. studies
- Support the Statement of Purpose with a CV listing previous academic and research experiences
- Request three letters of support to accompany the application, two of which will be written by persons able to specifically provide support of the student's potential to complete a Ph.D. program and why the B.S. to Ph.D. track is warranted

## Financial Assistance

Correspondence with one or more departmental faculty members before and during the application process is not compulsorily but is encouraged. Applicants will not be considered without a department faculty member who has agreed to serve as the major advisor and can offer a Graduate Research Assistantship (GRA). To read more about our research teams and find faculty contact information, please visit <https://www.ndsu.edu/agriculture/academics/academic-units/plant-sciences/research> (<https://www.ndsu.edu/agriculture/academics/academic-units/plant-sciences/research/>).

A twenty-hour (half-time) GRA is provided to each accepted M.S. Plan A and Ph.D. student based on scholarship and potential to undertake advanced study and research. The annual stipend varies based on the research project.

In addition to the stipend, graduate assistants who meet the hours worked and training requirements each semester receive a graduate tuition waiver. Students are responsible for differential tuition, student and course fees, and tuition for non-graduate level credits taken.

A limited number of Ph.D. Graduate Fellowships are available.

The Department of Plant Sciences has numerous annual scholarships of \$500 to \$1000 each for outstanding Plant Sciences graduate students.

## Degree Requirements

In the first year, each M.S. or Ph.D. student, in conjunction with their advisor, will form a supervisory committee, create a plan of study that meets disciplinary requirements below as well the goals of the student, and develop a research proposal paper for submission to the department.

## Master's Program

The M.S. program requires the completion of at least 30 credits, during which an overall GPA of 3.0 or better must be maintained. The M.S. degree may be earned by either of two options. The Plan A: Thesis Option emphasizes completion of a research project. The Plan B: Comprehensive Study Option requires more course work and instead of conducting research and presenting a thesis, the candidate presents a paper or papers to the supervisory committee, demonstrating ability for scholarly study and written expression.

Candidates working toward either Plan A or Plan B must pass an oral defense, present a public Exit Seminar on the thesis research or comprehensive study, and have their thesis/paper accepted by the Graduate School to complete the degree.

Code	Title	Credits
<b>M.S. Plan A - Thesis Option</b>		<b>30</b>
<b>Required Courses</b>		
PLSC 724	Field Design I	3
PLSC 790	Graduate Seminar	1
PLSC 798	Master's Thesis	10
<b>Additional Credits (13 credits must be didactic**)</b>		<b>16</b>
Students focusing on Plant Breeding and Genetics must take and earn a B or better in		
PLSC 718	Genetics & Plant Improvement	
PLSC 631	Intermediate Genetics	

Code	Title	Credits
<b>M.S. Plan B - Master's Paper Option</b>		<b>30</b>
PLSC 724	Field Design I	3
Additional 600-700 level courses (18 credits must be didactic**)		23
PLSC 790	Graduate Seminar	1
PLSC 797	Master's Paper	3

\*\* Didactic credits are graduate courses numbered 601-689, 691; 700-789, 791; and 800-889, 891.

## Doctoral Program

The Ph.D. program requires completion of at least 90 credits, during which time an overall GPA of 3.0 or better must be maintained. A Plant Breeding and Genetics subplan is available for doctoral students wishing to complete specific coursework, as listed below. To become a Ph.D. candidate, students are required to pass preliminary written and oral examinations directed to academic subject matter. Degree completion follows an oral defense of the dissertation, public Exit Seminar, and acceptance of the dissertation by the Graduate School.

### Master of Science Doctoral Track

Qualifying M.S. students accepted will be allowed to use 30 credits from their completed Master's degree toward the Ph.D., thereby completing at least 60 Ph.D. graduate credits rather than 90. No undergraduate courses (100-400) may be counted toward a Ph.D. degree.

### Bachelor of Science Doctoral Track

Qualifying B.S. students accepted will be required to complete 90 graduate credits toward the Ph.D. degree. No undergraduate courses (100-400) may be counted toward a Ph.D. degree.

All B.S. to Ph.D. track students must create, defend, and submit a manuscript to a scientific journal by the end of their sixth semester (spring/fall). This manuscript may be used as a chapter in the dissertation.

Code	Title	Credits
<b>M.S. (thesis option) to Ph.D.</b>		<b>60</b>
<b>Required Courses</b>		
PLSC 724	Field Design I (if not part of M.S. Must earn B or better)	3
PLSC 790	Graduate Seminar	2
PLSC 892	Graduate Teaching Experience	2
PLSC 899	Doctoral Dissertation	20
<b>Additional didactic credits ** (12 credits must be 700-level)</b>		<b>24</b>
Students focusing on Plant Breeding and Genetics must take and earn a B or better in		
PLSC 611	Genomics	
PLSC 631	Intermediate Genetics	
PLSC 718	Genetics & Plant Improvement	
<b>Additional credits</b>		<b>9</b>

Code	Title	Credits
<b>M.S. (thesis option) to Ph.D. - Plant Breeding and Genetics Option</b>		<b>60</b>
600 - 800 level graduate courses including:		36
PLSC 611	Genomics	
PLSC 631	Intermediate Genetics	
PLSC 718	Genetics & Plant Improvement	
PLSC 724	Field Design I (if not part of master's degree)	
PLSC 731	Plant Molecular Genetics	
PLSC 751	Advanced Plant Genetics	
PLSC 776	Advanced Plant Breeding	
PLSC 782	Population and Quantitative Genetics	
PLSC 790	Graduate Seminar	2
PLSC 892	Graduate Teaching Experience	2
PLSC 899	Doctoral Dissertation	20

\*\* Didactic credits are graduate courses numbered 601-689, 691; 700-789, 791; and 800-889, 891.