

# PLANT PATHOLOGY MINOR

## Description

The plant pathology minor is designed to provide essential knowledge and training for careers that involve plant health management. The minor is targeted to Biological Sciences, Grassland Systems, Microbiology, Regional and Community Forestry, Plant Biology, and Plant and Landscape Systems (four options: Agronomy, Horticulture, Turfgrass and Landscape Management) majors, although it is open to all students interested in plants and microorganisms. Students completing this minor will be able to distinguish the microorganism groups that cause disease in plants; explain the importance of the environment on disease occurrence; describe the interactions between pathogens and plants that determine disease; identify appropriate disease management strategies; demonstrate laboratory skills necessary to cause disease in plants and to extract and/or culture plant pathogens; and conduct plant disease related experiments.

## College Requirements

### College Admission

Requirements for admission into the College of Agricultural Sciences and Natural Resources (CASNR) are consistent with general University admission requirements (one unit equals one high school year): 4 units of English, 4 units of mathematics, 3 units of natural sciences, 3 units of social sciences, and 2 units of world language. Students must also meet performance requirements: a 3.0 cumulative high school grade point average OR an ACT composite of 20 or higher, writing portion not required OR a score of 1040 or higher on the SAT Critical Reading and Math sections OR rank in the top one-half of graduating class; transfer students must have a 2.0 (on a 4.0 scale) cumulative grade point average and 2.0 on the most recent term of attendance.

### Admission Deficiencies/Removal of Deficiencies

Students who are admitted to CASNR with core course deficiencies must remove these deficiencies within the first 30 credit hours at the University of Nebraska–Lincoln, or within the first calendar year at Nebraska, whichever takes longer. College-level coursework taken to remove deficiencies may be used to meet degree requirements in CASNR.

Deficiencies in the required entrance subjects can be removed by the completion of specified courses in the University or by correspondence.

The Office of Admissions, Alexander Building (south entrance), City Campus, provides information to new students on how deficiencies can be removed.

## College Degree Requirements

### Curriculum Requirements

The curriculum requirements of the College consist of three areas: ACE (Achievement-Centered Education), College of Agricultural Sciences and Natural Resources Core, and Degree Program requirements and electives. All three areas of the College Curriculum Requirements are incorporated within the description of the Major/Degree Program sections of the catalog. The individual major/degree program listings of classes ensure that a student will meet the minimum curriculum requirements of the College.

## World Languages/Language Requirement

Two units of a world language are required. This requirement is usually met with two years of high school language.

## Experiential Learning

All undergraduates in the College of Agricultural Sciences and Natural Resources must take an Experiential Learning (EL) designated course. This may include 0-credit courses designed to document co-curricular activities recognized as Experiential Learning.

## Minimum Hours Required for Graduation

The College grants the bachelors degree in programs associated with agricultural sciences, natural resources, and related programs. Students working toward a degree must earn at least 120 semester hours of credit. A minimum cumulative grade point average of C (2.0 on a 4.0 scale) must be maintained throughout the course of studies and is required for graduation. Some degree programs have a higher cumulative grade point average required for graduation. Please check the degree program on its graduation cumulative grade point average.

## Grade Rules

### Removal of C-, D, and F Grades

Only the most recent letter grade received in a given course will be used in computing a student's cumulative grade point average if the student has completed the course more than once and previously received a grade or grades below C in that course.

The previous grade (or grades) will not be used in the computation of the cumulative grade point average, but it will remain a part of the academic record and will appear on any transcript.

A student can remove from their cumulative average a course grade of C-, D+, D, D-, or F if the student repeats the same course at the University of Nebraska and receives a grade other than P (pass), I (incomplete), N (no pass), W (withdrew), or NR (no report). If a course is no longer being offered, it is not eligible for the revised grade point average computation process.

For complete procedures and regulations, see the Office of the University Registrar website at <http://www.unl.edu/regrec/course-repeats> (<http://www.unl.edu/regrec/course-repeats/>).

### Pass/No Pass

Students in CASNR may take any course offered on a Pass/No Pass basis within the 24-hour limitation established by the Faculty Senate. However, a department may specify that the Pass/No Pass status of its courses be limited to non-majors or may choose to offer some courses for letter grades only.

### GPA Requirements

A minimum cumulative grade point average of C (2.0 on a 4.0 scale) must be maintained throughout the course of studies and is required for graduation. Some degree programs have a higher cumulative grade point average required for graduation. Please check the degree program on its graduation cumulative grade point average.

## Transfer Credit Rules

To be considered for admission a transfer student, Nebraska resident or nonresident, must have an accumulated average of C (2.0 on a 4.0 scale) and a minimum C average in the last semester of attendance at another college. Transfer students who have completed less than 12 credit hours of college study must submit either ACT or SAT scores.

Ordinarily, credits earned at an accredited college are accepted by the University. The College, however, will evaluate all hours submitted on an application for transfer and reserves the right to accept or reject any of them. Sixty (60) is the maximum number of hours the University will accept on transfer from a two-year college. Ninety (90) is the maximum number of hours the University will accept from a four-year college. Transfer credit in the degree program must be approved by the degree program advisor on a Request for Substitution Form to meet specific course requirements, group requirements, or course level requirements in the major. At least 9 hours in the major field, including the capstone course, must be completed at the University of Nebraska–Lincoln regardless of the number of hours transferred.

The College will accept no more than 10 semester hours of C-, D+, D, and D- grades from other schools. The C-, D+, D, and D- grades can only be applied to free electives. This policy does not apply to the transfer of grades from UNO or UNK to the University of Nebraska–Lincoln.

### Joint Academic Transfer Programs

The College of Agricultural Sciences and Natural Resources has agreements with many institutions to support joint academic programs. The transfer programs include dual degree programs and cooperative degree programs. Dual degree programs offer students the opportunity to receive a degree from a participating institution and also to complete the requirements for a bachelor of science degree in CASNR. Cooperative programs result in a single degree from either the University of Nebraska–Lincoln or the cooperating institution.

## Dual Degree Programs

### A to B Programs

The A to B Program, a joint academic program offered by the CASNR and participating community colleges, allows students to complete the first two years of a degree program at the participating community college and continue their education and study in a degree program leading toward a bachelor of science degree.

The A to B Program provides a basic knowledge plus specialized coursework. Students transfer into CASNR with junior standing.

Depending on the community college, students enrolled in the A to B Program may complete the requirements for an associate of science at the community college, transfer to the University of Nebraska–Lincoln, and work toward a bachelor of science degree.

Participating community colleges include:

- Central Community College
- Metropolitan Community College
- Mid-Plains Community College
- Nebraska College of Technical Agriculture
- Nebraska Indian Community College
- Northeast Community College
- Southeast Community College
- Western Nebraska Community College

### 3+2 Programs

Two specialized degree programs in **animal science** and **veterinary science** are offered jointly with an accredited college or school of veterinary medicine. These two programs permit CASNR animal science or veterinary science students to receive a bachelor of science degree from the University of Nebraska–Lincoln with a degree in animal science or veterinary science after successfully completing two years of the

professional curriculum in veterinary medicine at an accredited veterinary school. Students who successfully complete the 3+2 Program, must provide transcripts and complete the Application for Degree form via MyRED. Students without MyRED access may apply for graduation in person at Husker Hub in the Canfield Administration Building, or by mail. Students should discuss these degree programs with their academic advisor.

### Cooperative Degree Programs

Academic credit from the University and a cooperating institution are applied towards a four-year degree from either the University of Nebraska–Lincoln (University degree-granting program) or the cooperating institution (non-University degree-granting program). All have approved programs of study.

### UNL Degree-Granting Programs

A University of Nebraska–Lincoln degree-granting program is designed to provide students the opportunity to complete a two-year program of study at one of the four-year institutions listed below, transfer to CASNR, and complete the requirements for a bachelor of science degree.

**Chadron State College.** Chadron State College offers a 2+2 program leading to a grassland ecology and management degree program and a transfer program leading to a bachelor of science in agricultural education in the teaching option.

**Wayne State College.** Wayne State College offers a 3+1 program leading to a bachelor of science in plant biology in the ecology and management option and a 3+1 program leading to a bachelor of science in Applied Science.

**University of Nebraska at Kearney.** Transfer programs are available for students pursuing degree programs leading to a bachelor of science degree.

**University of Nebraska at Omaha.** Transfer programs are available for students pursuing degree programs leading to a bachelor of science degree.

### Non University of Nebraska–Lincoln Degree-Granting Programs

CASNR cooperates with other institutions to provide coursework that is applied towards a degree at the cooperating institution. Pre-professional programs offered by CASNR allow students to complete the first two or three years of a degree program at the University prior to transferring and completing a degree at the cooperating institution.

**Chadron State College–Range Science.** The 3+1 Program in range science allows Chadron State College students to pursue a range science degree through Chadron State College. Students complete three years of coursework at Chadron State College and one year of specialized range science coursework (32 credit hours) at CASNR.

### Residency

Students must complete at least 30 of the total hours for their degree using University of Nebraska–Lincoln credits. At least 18 of the 30 credit hours must be in courses offered through CASNR<sup>1</sup> (>299) including the appropriate ACE 10 degree requirement or an approved ACE 10 substitution offered through another Nebraska college and excluding independent study regardless of the number of hours transferred. Credit earned during education abroad may be used toward the residency requirement if students register through the University of Nebraska–Lincoln and participate in prior-approved education abroad programs.

The University of Nebraska–Lincoln open enrollment and summer independent study courses count toward residence.

<sup>1</sup> Includes courses taught by CASNR faculty through interdisciplinary prefixes (e.g., LIFE, MBIO, ENVR, SCIL, EAEP, ENSC) and CASNR crosslisted courses taught by non-CASNR faculty.

### Online and Distance Education

There are many opportunities to earn college credit online through the University of Nebraska–Lincoln. Some of these credits may be applicable not only as elective credits but also toward the fulfillment of the College's education requirements. Credits earned online may count toward residency. However, certain offerings may not be counted toward scholarship requirements or academic recognition criteria.

#### For further information, contact:

Office of Online and Distance Education  
 University of Nebraska–Lincoln  
 305 Brace Labs  
 Lincoln, NE 68588-0109  
 402-472-4681  
<http://online.unl.edu/>

### Independent Study Rules

Students wishing to take part in independent studies must obtain permission; complete and sign a contract form; and furnish copies of the contract to the instructor, advisor, departmental office, and the Dean's Office. The contract should be completed before registration. Forms are available in 103 Agricultural Hall or online at the CASNR website.

Independent study projects include research, literature review or extension of coursework under the supervision and evaluation of a departmental faculty member.

Students may only count 12 hours of independent study toward their degrees and no more than 6 hours can be counted during their last 36 hours earned, excluding senior thesis, internships, and courses taught under an independent study number.

### Other College Degree Requirements

#### Capstone Course Requirement

A capstone course is required for each CASNR degree program. A capstone course is defined as a course in which students are required to integrate diverse bodies of knowledge to solve a problem or formulate a policy of societal importance.

### ACE Requirements

All students must fulfill the Achievement Centered Education (ACE) requirements. Information about the ACE program may be viewed at [ace.unl.edu](https://ace.unl.edu/) (<https://ace.unl.edu/>).

The minimum requirements of CASNR reflect the common core of courses that apply to students pursuing degrees in the college. Students should work with an advisor to satisfy ACE outcomes 1, 2, 3, 4, 6, and 10 with the college requirements.

### Catalog Rule

Students must fulfill the requirements stated in the catalog for the academic year in which they are first admitted to the University of Nebraska–Lincoln or when they were first admitted to a Joint Academic Transfer Program. Students transferring from a community college, but without admission to a Joint Academic Transfer Program, may

be eligible to fulfill the requirements as stated in the catalog for an academic year in which they were enrolled at the community college prior to attending the University of Nebraska-Lincoln. This decision should be made in consultation with academic advisors, provided the student a) was enrolled in a community college during the catalog year they are utilizing, b) maintained continuous enrollment at the previous institution for 1 academic year or more, and c) continued enrollment at the University of Nebraska-Lincoln within 1 calendar year from their last term at the previous institution. In consultation with advisors, a student may choose to follow a subsequent catalog for any academic year in which they are admitted to and enrolled as a degree-seeking student at the University of Nebraska–Lincoln in the College of Agricultural Sciences and Natural Resources. Students must complete all degree requirements from a single catalog year. The catalog which a student follows for degree requirements may not be more than 10 years old at the time of graduation.

## Requirements for Minor Offered by Department

Students pursuing the Minor in Plant Pathology will develop a foundational understanding of plant pathology by completing a set of core courses in plant pathology and an independent research or study project. Students who plan to pursue the minor must consult with a minor advisor assigned by the Department of Plant Pathology for guidance on the development of a course of study.

#### Core Requirements

PLPT 210	Plant Pathogens and Disease	2
PLPT 400	Intermediate Plant Pathology	3
PLPT 400L	Intermediate Plant Pathology Lab	1
PLPT 418	Microbial Genetics & Genomics	3
PLPT 496	Independent Study	1-5
or PLPT 498	Independent Research	
Credit Hours Subtotal:		12

#### Elective Courses

##### Plant Systems

Choose one of the following:		3
BIOC 434 /	Plant Biochemistry	
BIOS 434 /		
CHEM 434 /		
PLAS 434		
PLAS 325	Introductory Plant Physiology	
PLAS 435 /	Agroecology	
NRES 435		
PLAS 440 /	Great Plains Ecosystem	
RNGE 440 /		
NRES 440 /		
GRAS 440		

##### Microbiology

Choose one of the following:		3
BIOS 312	Microbiology	
BIOS 326	Biology of Viruses	
BIOS 421 /	Microbial Diversity	
MBIO 421		
BIOS 444 /	Earth and Environmental Microbiology	
GEOL 444		

PLAS 460 / Soil Microbial Ecology  
 BIOS 460 /  
 NRES 460 /  
 SOIL 460

Credit Hours Subtotal:	6
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<b>Total Credit Hours</b>	<b>18</b>
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## Grade Rules

### C- and D Grades

A grade of C or better must be earned in all courses in the minor, except PLPT 496 and PLPT 498.

### Pass/No Pass

No Pass/No Pass credit may count toward the minor, except for PLPT 496 and PLPT 498.

### Other

A maximum of 6 hours of transfer credit may be applied to the minor.

#### PLPT 110 Fantastic Fungi - The Fatal and the Friendly

**Description:** A survey of the impact of fungi on human history and welfare. Topics include: fungi as agents of plant and human diseases; fungal toxins that impact food safety and indoor air quality; decay and decomposition; fungi as food and fermenters; medicinal fungi and metabolites; and mycorrhizae, mutualism and biodiversity.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

#### PLPT 210 Plant Pathogens and Disease

**Prerequisites:** PLAS 131, BIOS 101, ENTO 115, or LIFE 120.

**Description:** Introduction to fungi, bacteria, nematodes and viruses that cause plant diseases. The impact that plant diseases can have on society and the environment. Strategies used in managing plant diseases in agricultural and landscape environments.

**Credit Hours:** 2

**Max credits per semester:** 2

**Max credits per degree:** 2

**Grading Option:** Graded with Option

#### PLPT 270 Biological Invaders

**Crosslisted with:** PLAS 270, NRES 270

**Prerequisites:** 3 hrs biological sciences.

**Description:** Impact of exotic species and invasive organisms: agricultural and medical emerging disease; predicting biological invasions; biological control; regulatory, monitoring, and control efforts; ecological impact.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

#### PLPT 400 Intermediate Plant Pathology

**Crosslisted with:** PLPT 800

**Prerequisites:** PLPT 210 or BIOS 312; concurrent enrollment in PLPT 400L

**Description:** Exploring the biology of plant pathogens, pathogen-host plant interactions, and environmental influences on plant diseases. Examining cultural, chemical, and biological strategies, along with host resistance, for plant disease management. Builds on topics covered in PLPT 210, with additional emphasis on the strategies employed by the four major groups of plant pathogens, plant responses to disease-causing organisms, and approaches to disease management.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**Offered:** SPRING

**Prerequisite for:** PLPT 801, AGRO 801, HORT 801

#### PLPT 400L Intermediate Plant Pathology Lab

**Crosslisted with:** PLPT 800L

**Prerequisites:** Concurrent enrollment in PLPT 400/800

**Notes:** BIOS 314 recommended. At present, PLPT 400/800 may be taken without PLPT 400L/800L.

**Description:** Companion lab for PLPT 400/800

**Credit Hours:** 1

**Max credits per semester:** 1

**Max credits per degree:** 1

**Grading Option:** Graded with Option

**Offered:** SPRING

**Course and Laboratory Fee:** \$60

#### PLPT 412 Bacterial Lifestyles

**Crosslisted with:** PLPT 812

**Prerequisites:** BIOS 312 or BIOS 201 or PLAS 215

**Description:** Covers principles of bacteriology focusing on the strategies bacteria use to thrive and survive in many different environments including non-living surfaces, and other living organisms.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded

**Offered:** SPRING

#### PLPT 414 Turfgrass Disease Management

**Crosslisted with:** AGRO 814, HORT 814, PLPT 814, PLAS 414, TLMT 814

**Prerequisites:** BIOS/PLPT 369 or one semester of introductory plant pathology.

**Description:** Pathogens, epidemiology, and control of diseases specific to turfgrass.

**Credit Hours:** 1

**Max credits per semester:** 1

**Max credits per degree:** 1

**Grading Option:** Graded with Option

**PLPT 415 Corn Diseases****Crosslisted with:** PLPT 815**Prerequisites:** PLPT 210 or PLPT 400 or equivalent**Notes:** Taught online only. This is an 8-week mini-course.**Description:** Introduction to the important diseases affecting corn (maize) in Nebraska and other areas of the United States. Pathogen biology, favorable conditions, disease diagnosis based on symptomatology and management strategies are emphasized**Credit Hours:** 1**Max credits per semester:** 1**Max credits per degree:** 1**Grading Option:** Graded**PLPT 418 Microbial Genetics & Genomics****Crosslisted with:** PLPT 818, MBIO 418**Prerequisites:** BIOS 201 or PLAS 215.**Notes:** BIOS 312 is recommended.**Description:** Inheritance, exchange, and regulation of genes in prokaryotic microorganisms: gene structure and function; gene transfer and the elements (plasmids, phages, and transposons) involved; DNA mutations, repair, and genetic analysis; genome sequencing, microbial genome databases, and global gene expression analysis.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded**Prerequisite for:** PLPT 801, AGRO 801, HORT 801**ACE:** ACE 10 Integrated Product**PLPT 495 Internship in Plant Pathology****Prerequisites:** Junior standing.**Description:** Experience in a work place setting that is directly related to Plant Pathology.**Credit Hours:** 1-3**Min credits per semester:** 1**Max credits per semester:** 3**Max credits per degree:** 5**Grading Option:** Pass No Pass**PLPT 496 Independent Study****Prerequisites:** Advanced approval of the plan of study and permission.**Description:** Research, literature review, extension of course work, or preparation of teaching materials.**Credit Hours:** 1-5**Min credits per semester:** 1**Max credits per semester:** 5**Max credits per degree:** 5**Grading Option:** Graded with Option**PLPT 498 Independent Research****Prerequisites:** Permission.**Description:** Independent research in areas of plant pathology.**Credit Hours:** 1-3**Min credits per semester:** 1**Max credits per semester:** 3**Max credits per degree:** 6**Grading Option:** Graded with Option**PLPT 499H Honors Thesis****Prerequisites:** Admission to the University Honors Program and permission**Notes:** AGRI 299H recommended**Description:** Conduct a scholarly research project and write a University Honors Program or undergraduate thesis.**Credit Hours:** 3-6**Min credits per semester:** 3**Max credits per semester:** 6**Max credits per degree:** 6**Grading Option:** Graded