Graduate Student Handbook

2015 – 2016

University of Minnesota
Department of Plant Pathology
St. Paul, Minnesota

EQUAL OPPORTUNITY STATEMENT

The University of Minnesota shall provide equal access to and opportunity in its programs, facilities, and employment without regard to race, color, creed, religion, national origin, gender, age, marital status, disability, public assistance status, veteran status, sexual orientation, gender identity, or gender expression.

Inquiries regarding compliance may be directed to the Director, Office of Equal Opportunity and Affirmative Action, University of Minnesota, 274 McNamara Alumni Center, 200 Oak Street S.E., Minneapolis, MN, 55455, (612) 624-9547, eoaa@umn.edu. Web site at diversity.umn.edu/ eoaa.
“If a man empties his purse into his head, no man can take it away from him. An investment in knowledge always pays the best interest”. Benjamin Franklin

Welcome to the University of Minnesota Graduate Program in Plant Pathology! We are delighted you’re here and we are confident your graduate experience will exceed your expectations.

The Department of Plant Pathology at the University of Minnesota has one of the longest, most broad ranging, and most successful graduate education programs in plant pathology in the world. Since 1905, when the University’s first Ph.D. in plant pathology was awarded, more than 400 Ph.D. and 400 M.S. students have graduated. Alumni and faculty from the department include a winner of a Nobel Peace prize (Norman Borlaug, 1970), a Knight in Denmark (Bent Skovmand, 2003), and thirteen Presidents of the American Phytopathological Society. In the 2007-2008 academic year, our Department celebrated its 100th anniversary (1907-2007), and the American Phytopathological Society celebrated its centennial (1908-2008) by holding the APS National Meeting in Minneapolis.

During your time in the department, I am confident you will be presented with many opportunities to interact with diverse, interesting, thought-provoking and creative faculty, alumni, students and staff. I encourage you to embrace these opportunities and to let your dreams for the future evolve along with them. This is an exciting time for plant pathology and for plant sciences in general. We are in an age of incredible technological advances, which can be brought to bear on a number of longstanding questions about microbes and their interactions with plants. The age of “-omics” (genomics, proteomics, metabolics, etc.) coupled with informatic tools and the promise of high-throughput phenotyping provide new opportunities for solving plant pathology problems related to food production, quality, safety, and nutrition, as well as to those pertaining to environmental resources and quality of life. You can anticipate that throughout your career at the University you will witness and contribute to advances in disease diagnosis, control and prevention.

This handbook is provided as a means for you to quickly familiarize yourself with the rights, privileges and responsibilities of the program. Your suggestions on improving the handbook are always welcome.

Congratulations on your decision to pursue graduate study in plant pathology at the University of Minnesota! I wish you the very best as you pursue your professional goals. If I can be of any help, please let me know—my door is always open.
Mission Statement

The mission of the Department of Plant Pathology is education, research, and outreach focused on plant diseases and the biology of plant-microbe interactions to insure sustainability of agricultural, forest, and natural ecosystems for the benefit of society.

Expanded Mission - Plant Pathology

The mission of the Department of Plant Pathology is to serve the people of the State of Minnesota, and where possible citizens of other states and nations in the diagnosis, understanding, management, and control of plant diseases caused by biotic and abiotic agents, and the deterioration of plant products. The Department also carries on broad-based, fundamental investigations at the practitioner and theoretical level of plant pathogenic and related agents, and their by-products, which affect human endeavors related to food and fiber production and utilization. The beneficial use and genetic modification of plants when related to disease resistance is within the mission of the Department.

The mission is accomplished by research, by extending information to clientele through a variety of methods, and by the formal teaching of undergraduate and graduate courses in plant disease, disease control and management, disease theory at all levels of biological organization from
molecular to populations, and plants pathogenic and related agents (including fundamental materials related to mycology, plant virology, plant bacteriology, plant nematology and other biotic agents as well as abiotic agents of plant disease).
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Plant Pathology at the University of Minnesota celebrated its Centennial (100th birthday) in 2007. This Department has a rich, impressive history developed by serving the plant health needs of Minnesota and extending this knowledge nationally and internationally. Its talented faculty, staff and alumni, although little-known within the University of Minnesota, are recognized world-wide for their application and integration of scientific principles to the problem of producing disease resistant, highly productive important food plants, for preserving genetic diversity of these plants, and for their humanitarian efforts to reduce world hunger and combat rural poverty. The alumnus, Norman Borlaug, perhaps best exemplifies them and their efforts. Norman Borlaug is one of only five people to have received the Nobel Peace Prize, the Presidential Medal of Freedom and the Congressional Gold Medal. He shares this honor with Mother Teresa, Martin Luther King, Nelson Mandela and Elie Wiesel.

In 1907 the University of Minnesota, with support from flour milling interests powered by the falls of Saint Anthony on the Mississippi river, the railroad industry and the United States Department of Agriculture, formed the predecessor to the current Department of Plant Pathology. It was the Division of Vegetable Pathology and Botany (agricultural) and was housed in the College of Agriculture on the Saint Paul Campus. It was a response to devastating wheat stem rust epidemics, especially the epidemic of 1904.

Early department faculty, students and alumni were renowned contributors to the science, theory and practice of plant pathology. In particular, they excelled at research into microbial variability and adaptability. They specialized in the understanding and use of genetic control of plant diseases. Minnesota discoveries like “physiological races” for rusts and other biotrophic fungi led to the gene-for-gene theory by the alumnus H.H. Flor. Gene-for-gene was put forward for understanding the interactions of fungal races and plant resistance genes. Minnesota truly was the “Mecca” of understanding microbial variability and the genetic control of plant diseases.

Minnesota has one of the longest established, broadest ranging, and most successful graduate education programs in Plant Pathology in the world. The first Ph.D. degree involving plant disease at Minnesota was awarded in 1905 (Edward M. Freeman). This was two years before the department’s official inception. Dr. Freeman was then appointed head of the fledgling Vegetable Pathology and Botany Department. Since 1907, thousands of students and post-graduate visitors from all parts of the world have partaken of graduate education in Plant Pathology at Minnesota. Through 2011, a total of 442 Ph.D. and 431 M.S. degrees in Plant Pathology were awarded. Stability, a sense of unity and tradition, written guidelines, graduate student offices, and experience in mentoring and advising sustain excellence and pride in the Plant Pathology Graduate
Program.

For more historical perspectives please see the Department of Plant Pathology’s web page - http://plpa.cfans.umn.edu/

I. Department of Plant Pathology and University of Minnesota Facilities and Services

A. General Information

The Department of Plant Pathology is housed in Borlaug Hall, Christensen Laboratory, and Stakman Hall on the Saint Paul Campus of the University of Minnesota. The Department of Plant Pathology Administrative Office is located in 495 Borlaug Hall. The Department occupies laboratory and office space in Stakman Hall and Christensen Laboratory. The Plant Pathology Library is located in 395 Borlaug Hall. Teaching laboratories are located on the second floor of Borlaug Hall (Rooms 291, 295, and 296) and there is a lecture room on the third floor of Borlaug Hall (Room 365). In addition, there are general lecture/teaching laboratories in the Plant Growth Facility West (Rooms 132 and 136). There are two departmental conference rooms: 491 Borlaug Hall and 302 Stakman Hall. These rooms are scheduled for meetings, classes, seminars, and any other appropriate gathering. Reservations to use the conference rooms for a specific date and time can be made at the receptionist's desk in the Plant Pathology office. There is a student lounge/study area and a small kitchen in room 411 Stakman Hall with a refrigerator, microwave, and sink for general use.

Building and Room Access

After-hours access to Borlaug Hall, Christensen Lab, and Stakman Hall uses a card reader and requires authorization on your University of Minnesota ID. If you require access, please bring your ID to the plant pathology administrative office in 495 Borlaug Hall. It normally takes 1 – 3 days for access to be added to your card.

Keys for entry to departmental offices and research laboratories can also be obtained from the departmental administrative office.

Security

Campus buildings are locked from 6:00 p.m. to 6:00 a.m. week nights and all day Saturday and Sunday. Your student ID card can be used to unlock the outside door after hours. Many people have access to building facilities during working hours. Keep items of value out of sight, preferably locked in a desk or cabinet. We encourage you to keep your offices and labs locked when you are not around. Windows should be closed when leaving in the evening. If you have valuable articles taken from your work place, please report the incident immediately to the University Police and the Department Administrative Director. For entry into the autoclave room in Borlaug Hall, your student
ID number needs to be logged into the system. Please see Chana in the main office to get access to this room.

**Graduate Student Desk Assignment**
The administrative staff will assign an office space and provide a key to the office for each new graduate student.

**Mail**
Graduate student mailboxes are located at the west end of the hallway on the fourth floor of Stakman Hall. Messages and mail are distributed to mailboxes daily. If you plan to be gone for an extended period of time, please notify the administrative staff in 495 Borlaug Hall. Boxes for outgoing campus mail and U.S. mail are located in 495 Borlaug Hall. The U.S. Post Office has an office on the lower level of the St Paul Campus Student Center.

**4th Floor Phone (612-625-4204)**
A telephone for student use is located in the hallway by Room 411 in Stakman Hall. This telephone is limited to local calls. For calls within the Twin Cities campus, you need only dial the last five digits of a phone number. To access an outside line, dial 8. Any repair requests should be submitted to the department administrator.

**Student/Staff Faculty Directory**
An online university student/staff directory is located at: [http://www.umn.edu](http://www.umn.edu). The directory can be used to find various departments, services and individuals. A listing of all Plant Pathology personnel is included in this directory as well.

**Job Book**
Information regarding available positions in plant pathology and related fields is maintained in the "Job Book" kept in 416 Stakman. The information includes job opportunity listings with Career Services in the College of Food, Agricultural and Natural Resource Sciences, a listing of positions with the U.S. Department of Agriculture, and various notices of post-doctoral and faculty positions available at other institutions.

**Bulletin Boards**
The main departmental bulletin board is located outside the administrative office. There you will find information on departmental and intradepartmental seminars, conferences, social activities, and other pertinent announcements. There are bulletin boards located on each floor of Stakman Hall and Christensen Laboratory which may be used for supplemental posting of any notices and announcements.
Departmental Communications
Departmental announcements, seminars, meetings, social activities, and introductions are disseminated either by email to the entire department or posted on the department website. We encourage you to submit any announcements to the administrative office.

Copy Machines
A copy machine is located in 416 Stakman Hall. It has an automated accounting system and requires an account number to operate it. Graduate students needing to use the copy machine for their research project must get an account number from their project leader. For demonstrations on how to operate the copy machine or for any problems related to the machine, please see the administrative staff.

The copy machine located in 495 Borlaug Hall has fax and scanning capabilities. Please check with the administrative staff if you need assistance with this copier.

Instructions for Scanning to Email
- Select “Email” on the LCD screen
- Select “To:” and enter an email address
- The subject line is automatically filled in; however, you can change it by selecting “Subject:” and deleting the prefilled contents
- Once the address has been entered, place the document print side up in the feeder and press “Start”
- When done, press “Clear All” to clear all the entries made during the session

Setting up Internet and Email Accounts

Before You Arrive on Campus
1. Initiate your Internet ID.
   Your Internet ID is your unique account name and provides access to all University network resources including email, and more. To use it, you first need to activate it. See the Student Internet Account Initiation page at: https://www.umn.edu/initiate
2. Manage your Internet account options.
   Once you have initiated your Internet ID, you can manage changes to your account on your My Account page (https://www.umn.edu/dirtools), such as:
   o Change or reset your password.
   o Manage email, Google, and NetFiles options.
   o View blocked incoming emails.
3. Get your computer ready for the University network.
   Follow the steps on the Secure a Student Personal Computer page. https://umnprd.service-now.com/kb_view.do?sysparm_article=KB0016362
After You Arrive on Campus

1. Access your University email account.
   - Your University email account is the official means of communication at the U of M. Your University email address is: [your Internet ID]@umn.edu.
   - Find Desktop/Mobile Device Client Configuration instructions at
     http://it.umn.edu/services/all/messaging-calendaring/email/index.htm
     and email Setup Guides on the Email site.
   - Check your email with U of M Web Based Email. https://mail.umn.edu/

2. Learn about technology services.
   - Technology Help is your first point of contact for hardware, software, and Internet support. http://it.umn.edu/help/index.htm
   - Computer labs are conveniently located across campus.
     http://it.umn.edu/services/all/academic-technology-spaces/computer-labs/index.htm
   - Face-to-face and online technology training is available at no charge.
     http://it.umn.edu/services/all/training-usability/training/index.htm
   - A variety of other academic technology tools and general technology services are also available.
     http://it.umn.edu/services/all/academic-technology-tools/index.htm
Active Directory
Active Directory is a centrally provided University resource that includes departmental and individual file storage, along with the ability for administrators in the CFANS organizational unit (OU) to apply critical security updates to Windows computers that have been bound to the AD domain. AD allows CFANS to leverage central resources and prevent duplication of core services such as web, email, and file storage systems. Active Directory storage is backed up twice daily. Shadow Copy backups for individual files and folders are available for 20-30 days, allowing you to restore data accidentally deleted or edited.

Connect To Active Directory Fileshares
The network shares or Active Directory (AD) file shares can be accessed from Windows, from Mac OS X, or from a web browser. File share access is managed by CFANS OIT and can be requested by contacting the CFANS Helpdesk. Students may be given access to specific folders or files within the departmental share as needed at the request of their adviser, professor, or supervisor.

Here are two things to keep in mind as you access your data:

- No matter which way you access data, remember not to move any private or sensitive data to a personal computer.
- If you need to connect to AD fileshares over wireless or from off campus, connect to VPN first.

Audio-Visual Equipment
The Departmental/Extension audio-visual equipment may be signed out with the administrative staff in 495 Borlaug Hall. The following equipment is available:

- Canon PowerShot SD790 IS digital camera
- LG DLP LCD projector
- NEC VT 670 LCD projector
- Dell laptop computer
- Apple laptop computer
- Overhead Projector

Administrative Staff
The department administrative staff serve as a source of information on University procedures and policies. The staff would be happy to help you with any questions or problems you may encounter.

The administrative staff is available to assist you with departmental communications and in using the Xerox and fax machines. If you need to meet with the department head, (with or without an appointment) please see administrative staff.
**Function of the Administrative Director**
The administrative director serves as the department human resources director and can assist with information and/or sources to contact regarding any personnel matters. Department personnel have access to a number of resources for dealing with problems which may arise in the workplace. The administrative director can assist you in identifying these resources. As facilitator for the department head and coordinator of special functions, the administrative director is the source of information regarding departmental policies and special activities. If you have questions relating to the management of the physical facilities and equipment such as custodial services, room signs and maintenance, see the administrative director.

**Purchasing**
Your advisor, laboratory manager or the accounting staff can assist you with ordering laboratory supplies and equipment. To place orders yourself, you will need the project leader’s approval and appropriate training. After you have his/her approval, please see the accounting staff in 495 Borlaug Hall to arrange for training.

**Travel and Employee Reimbursements**
All travel and employee reimbursements require approval of your project leader. A travel expense report must be submitted within ten days of traveling. The expense report must be signed by your project leader. University of Minnesota Travel policies are located at web site: [http://travel.umn.edu/polandpro.php](http://travel.umn.edu/polandpro.php)

Additional information regarding university travel and reimbursement can be found at [http://travel.umn.edu/](http://travel.umn.edu/).

**Direct Deposit of Pay**
Forms are available from the accounting staff or on-line at HRSS web site ([http://hrss.umn.edu/](http://hrss.umn.edu/)) to arrange direct deposit of your paycheck. Pay statement information for all University faculty, staff, and student employees is on-line through the HRSS web site. Employees can view their pay information two days earlier than the official pay day (note that pay is not deposited sooner). Pay information for two years is available on-line.

If you currently have direct deposit at one bank and are planning to switch to another bank, it is recommended to stop the direct deposit and receive one "hard" check before starting direct deposit with your new bank. After you receive one hard check, you will need to complete another direct deposit form to start the direct deposit with your new bank.
CFANS OIT Services
CFANS allows students to check out one of 30 Dell laptops with expanded features available for up to one week at no charge from libraries on the St. Paul Campus. All laptops have DVD +/- RW drives, wireless networking, and the ability to be plugged into a LCD projector for presentations. If a laptop is not available for checkout immediately, you may reserve the next available laptop by asking the librarian at either of the libraries.

This program is made possible through the use of CFANS Student Fees, and therefore is only accessible to students who have paid the current semester's technology fee to CFANS. Students interested in checking out or reserving a laptop should stop into or call one of the two libraries to make a reservation.

The laptop check-out program is operated out of these CFANS libraries:

- Natural Resources Library - 375 Hodson

CFANS Computer Labs
The College of Food, Agricultural and Natural Resource Sciences (CFANS) maintains computer rooms for class use by students, staff and faculty. Funds from the CFANS Student Technology fee are used to maintain the CFANS student labs. All computers are networked (allowing access to the internet and to the network printers).

The computer labs are located in the following St. Paul campus buildings: BioAgEng Bldg 105, Food Science & Nutrition Bldg 220 & 260, Green Hall 210A, Haecker Hall 445, Ruttan Hall 314, and Skok Hall 35.

Software Programs
CFANS provides software on all computers in the computer labs. Software specific to particular classes is also available in some computer labs. Only software purchased by or licensed to CFANS is allowed on the computers.

File Storage
Please save all your personal files/documents on a flash drive, to your Netfiles account, or Google docs. DO NOT STORE FILES ON THE COMPUTER! They will be deleted when the system is shut down.

Viruses
It is each student's responsibility to maintain flash drives, disks and files that are virus-free. Check your media frequently, since viruses can do major damage to files and computers. Antivirus software is installed on departmental computers.

Printing
In an effort to conserve resources and improve printing services in CFANS, student
computer labs use **Pharos print-release stations**. Students must use their U cards to release printing jobs from a print-release station attached to the printers.

Print jobs go to **Pharos print-release stations**, small PCs with U-card readers in their keyboards, which are available in most CFANS labs. When a job is sent to the printer, it will appear at the print-release station, and students can release their jobs with their U Cards.

Students can use their U cards to release printing jobs from a print-release station attached to the printers in the CFANS student computer lab and in the CFANS Pharos station in 50 Coffey Hall. When a job is sent to print, the student will be asked to enter a simple password that he or she creates. The job will appear in the queue at the print-release station. To release it, the student must swipe his or her U Card, find the print job in the queue, and enter the password.

The screen will lock within 5 seconds after the card is swiped; moving the mouse will keep the screen open.

**Computer Software/Hardware Problems**
The computer labs are available for your convenience. Their usefulness and longevity depend upon everyone using the rooms and equipment responsibly.

If a computer or printer seems to be malfunctioning, there are problems with print quality (streaking, toner low), paper supply is low or has run out, or you experience software problems, please contact the CFANS Helpdesk and a technician will resolve the issue.

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**B. Research Facilities in St. Paul**

**Growth Chambers**
We have eleven Conviron controlled environment chambers and one Percival incubation chamber located in 194A Borlaug Hall. They are equipped with fully programmable temperature, lighting, and humidity controls. High humidity and misting are features especially desirable for Plant Pathology research. We also have access to the remaining ~90 growth chambers on campus located in our neighboring departments.

The space must be requested and approved, prior to any use of growth chambers. A user fee is assessed to cover operating expenses. Please provide a valid account number before beginning use of a chamber. Be sure to determine if a greenhouse will work as well as a growth chamber before requesting this premium space. Potting materials are provided in 194 Borlaug. Please make certain that you clean up after yourself.

Contact Andy Scobbie for space and service at 612-625-2712 or cell 612-803-8007, 439 Borlaug Hall, or scobb001@umn.edu.
Research Plots
Over 150 acres of usable field space is available at St. Paul. This provides an ideal location for plot work. Space requests are made at:
http://www.maes.umn.edu/Plant_Growth_Facilities/index.htm. Usually space requests are accepted in late winter for the following spring planting. All space requests are generally accommodated. Larger plots, overflow, or replication studies may need to be planted at the UMore Park in Rosemount, the Sand Plain Irrigation Research Station at Becker, or at the University's other Experiment Stations.

The fields will be made ready for planting, marked for rows, irrigated if needed, and treated with herbicides as requested. The user will plant, harvest, hand weed and conduct any other research-specific activities. (Users must provide an account number for any operations done by Agricultural Services).

For space and service, contact: Mike McClellan or Tom Warnke. Mike can be reached at 612-624-5395 or mccle004@umn.edu. His office is located upstairs in the Small Grains Greenhouse Head House. Tom can be reached at 612-625-1228 or warnk001@umn.edu. Tom’s office is located in the Farm shop behind Crops Services.

Greenhouses
The University has about two acres of greenhouse growing space. The greenhouses, support head houses, teaching rooms, environmental chambers, and high security containment facilities (i.e. BL-2 and BL-3) are collectively referred to as the Plant Growth Facility (PGF). All of these facilities are located across Gortner Avenue from Stakman Hall. Greenhouse space is assigned on a per experiment basis, though ongoing projects are welcome to retain space as needed. Space requests are made at:
http://www.maes.umn.edu/Plant_Growth_Facilities/index.htm. Work with your project leader in determining your space needs. For maps of the greenhouses see:
http://www.maes.umn.edu/Plant_Growth_Facilities/BuildingsMaps/index.htm. For more information contact Roger Meissner or Pam Warnke. Roger can be reached at 612-624-3631, cell 612-685-4897, or meiss003@tc.umn.edu. His office is in room 158A of Plant Growth Facility West. Pam can be reached at 612-625-3153 or alter002@umn.edu. Her office is in room 158C of Plant Growth Facility West.

Cold storage, general storage, autoclaves, dryers, seed handling
Cold storage is available in 192 Borlaug Hall, 210 Christensen Laboratory, 36 Crops Services, and 7 Crops Research. Label, date, and inventory all items stored in these areas.

General storage is available in several locations. See Andy Scobie if you need storage space. Do not use greenhouse rooms, hallways, or other common areas for general storage.
Autoclaves and instructions for their use are in 290 Borlaug Hall and 220 Christensen Laboratory. To obtain access to the autoclave room located in 290 Borlaug, bring your University of Minnesota ID to the administrative staff in 495 Borlaug Hall so your information can be entered into the security system.

Dryers, threshing equipment, seed storage, walk-in coolers, and freezers are available for your use in the Crops Research and Crops Service building. For instruction or assistance, contact Mike McClellan at 612-624-5395 or mccle004@umn.edu. Mike's office is located upstairs in the Small Grains Greenhouse Head House.

There is a dust collection system in the Crops Research building, this facility can accommodate many dust producing activities and keep the working environment safe. If you need to thresh, clean or grind plant or soil samples in this room please contact Andy Scobie at 612-625-2712 or cell 612-803-8007, scobb001@umn.edu.

C. Outreach Research Facilities - Branch Stations

Our faculty and students have access to Research and Outreach Center (ROC) plot facilities throughout the state. The ROC’s at Crookston, Grand Rapids, Lamberton, Morris, and Waseca provide facilities for research under local climatic and soil conditions. ROC’s are staffed with scientists from a variety of specialized fields, and each center has its own Head and advisory committee. Three faculty members in our department, Drs. Senyu Chen (Waseca), Madeleine Smith (Crookston), and Ashok Chandra (Crookston) are located at ROCs. Departmental research is also done at the Plant Science Research Facilities at UMore Park in Rosemount, which is only 30 miles from campus.

Other smaller facilities are available for plant disease research as necessary. Some collaborative research is carried out on tree diseases with faculty from the Department of Horticultural Science and Landscape Architecture at the Horticultural Research Center and the Landscape Arboretum near Chaska, Minnesota. We also have research projects at the Sand Plain Experimental Farm, located near Becker, on land owned by Northern States Power. The Vocational-Technical Institute at Staples provides land and other support for studies of crops and production practices, mainly on irrigated land. Research there is directed by St. Paul campus scientists and supervised by a university employee. Potato research is done at the Red River Valley Potato Growers Association Research Farm at Grand Forks, North Dakota. This facility is part of a cooperative agreement with industry, the USDA Potato Lab, University of Minnesota, Minnesota Department of Agriculture, North Dakota State University and North Dakota Department of Agriculture. The cooperative research and extension programs are coordinated between the two states.
The University maintains a forest and biological station in Itasca Park on the east shore of Lake Itasca. This station has housing and laboratory facilities for faculty and students. During the summer months, instructional programs occupy the facilities; however, individual researchers and students can use the laboratories and housing when available. Itasca Park and surrounding areas provide a wide range of habitats ranging from forested areas to the prairies west of the Park.

The Cloquet Forestry Center, located 135 miles north of the St. Paul campus, provides faculty and students with facilities for research in a variety of forest stands. Housing is available to individuals and groups. The center has a library, laboratories, conference rooms, computer lab facilities and classrooms. In addition, the resident staff is available to help researchers find suitable sites for their projects, and to assist them, if necessary, with field work that involves cutting trees or providing field equipment. The forest covers 3,751 acres of pine, aspen, spruce and hardwood stands. Space is available for experimental plantings.

D. Advanced Microscopy, Imaging and Digital Equipment

The Imaging Center located in “BioDale” is an advanced instrumentation facility. Access is via the “Gopher Way” of the lower floor of Gortner Hall of Biochemistry. The facility has a wide variety of advanced light and electron microscopes. They also have digital imaging, phosphorimaging and fluoroimaging equipment. Equipment is available for use on a fee structure, training is also available. Poster printing can also be done at this facility.

For descriptions and user information, see: [http://www.cbs.umn.edu/ic/](http://www.cbs.umn.edu/ic/)

E. Fungal Herbarium

The historically significant part of the Mycological Herbarium contains nearly 55,000 collections of Hyphomycetes, Coelomycetes, Uredinales, and Ustilaginales that are contained in packets with the plant tissue they were found on. Most of these collections were purchased by the department earlier in its history, as sets of 'fungi exsiccati'. This part of the herbarium is referred to as the international collection as it represents the collecting efforts of Europeans, South Americans, and North Americans. The herbarium is a mycological treasure of samples that can be used for study.

The Minnesota collection was an important component of the herbarium. At one time, it was the source of named fungi being worked on in Minnesota. Several graduate students and faculty have made valued additions to the Minnesota collections over the past several years. The collection is gradually building and is available for graduate student research as necessary.
The plant disease collections were combined with collections of other fungi to make a large, comprehensive fungal herbarium of over 100,000 accessions. This herbarium is located on the eighth floor of the Biological Sciences Building. A database is maintained and can be accessed through the Bell Museum of Natural History’s website at:
http://www.bellmuseum.umn.edu/ResearchandTeaching/Collections/ScientificCollection/FungalHerbarium/index.htm

F. Library System

Library Catalog
Books, audiovisual material, journals and electronic resources can be searched for in the University of Minnesota Libraries catalog, MNCAT. Available online at: http://www.lib.umn.edu/catalogs. You can limit your search to the Plant Pathology Library under the Advanced Search option.

Journal Articles
The best journal indexes for finding plant pathology-related articles can be found on the Journals tab of the University Libraries website at: https://www.lib.umn.edu/.
Any articles in journals not held by the Libraries can be requested through interlibrary loan at: (https://umn.illiad.oclc.org/illiad/logon.html).

Circulation Policies
Library users must present their University ID cards (U-Card) to borrow materials. Books and theses may be borrowed for thirteen weeks at a time by faculty, staff, and graduate students. Undergraduates may borrow books and theses for six week periods. Periodicals may be checked out for one day at a time. Books that have been out for at least two weeks may be recalled for another user. If a book or journal article is not owned by the University Libraries, you may request it through the Interlibrary Loan service (https://umn.illiad.oclc.org/illiad/logon.html).

Other Services:
The Plant Pathology Library offers public printing (10 cents/page), a photocopier (15 cents/copy) and wireless access. The three library computers can be used to access library resources, and also have Microsoft Office software for University-related work. The Library has a slide viewer and TV/VCR.

Course Reserves
Library materials, photocopies of articles, personal copies of books, videos or other material may be placed on Reserve at the instructor's request. Items on Reserve are shelved next to the current periodicals, and are arranged by the course number. Most
reserve items may be checked out of the library for two hours at a time when the library is open. Overnight loans are available one hour before closing, and are due at 10:00 the next morning; 11:00 Saturday for a Friday loan. Items checked out on Saturday are due at 10:00 Monday morning. Electronic reserves are also available. Visit http://www.lib.umn.edu/site/reserves for more information.

The University of Minnesota-Twin Cities Libraries, with a collection of more than six million catalogued volumes, ranks 16th in size among American universities. Included in the system are the Bio-Medical Library (health sciences); Walter Library (engineering, architecture, mathematics, physics, geology); Magrath and St. Paul Campus Libraries (agriculture, biological sciences, veterinary medicine); and Wilson Library (social sciences, humanities, archives, special collections). In addition to strong comprehensive research collections, the system offers a full range of reference and information services, including specialized reference assistance, data base literature searching, and library user instruction.

Other libraries on the St. Paul Campus are:

- Magrath Library, 1984 Buford Avenue - Subjects include: agriculture, agronomy, animal science, biology, environmental science, horticulture, plant biology, and soil science
- Natural Resources Library, 375 Hodson Hall
- Veterinary Medicine Library, 450 Veterinary Science

Other major libraries of the University Libraries are:

- Bio-Medical Library, East Bank (Diehl Hall)
- Wilson Library, West Bank - Subjects include: art, business, economics, history, language, literature, philosophy
- Walter Library/Science & Engineering Library, East Bank - Subjects include: architecture, chemistry, engineering, geology, mathematics, and physics.

G. Campus Information

The University of Minnesota was chartered in 1851, seven years before the Territory of Minnesota became a state. It began as a preparatory school, was beset by financial crises during its early years, and was forced to close during the Civil War. In 1869, the University reopened its doors with nine faculty members and 18 students. Two students were graduated at the University's first commencement in 1873. The first Ph.D. was awarded in 1888 and the Graduate School celebrated its 100th anniversary during the
1987-88 academic year. Today the University is one of the largest in the U.S., with approximately 53,000 students in its degree-granting colleges and schools, and more than 17,000 in Continuing Education and Extension. The main campus is in Minneapolis (East Bank) which along with the Minneapolis West Bank and St. Paul campuses, are known collectively as the Twin Cities campus. The University system also includes a medium-sized university at Duluth, a liberal arts college at Morris, and 4-year colleges at Crookston and Rochester, Minnesota. Campus tours are available through the Department of University Relations. Campus maps are available in the Plant Pathology Administrative Office or online at http://campusmaps.umn.edu/tc/.

H. Campus Facilities and Services

UCard – Official UMN ID Card
As a graduate student member of the Twin Cities campus you are eligible for a U Card, your official University of Minnesota photo ID card.

Your first U Card can be obtained at the U Card Office. Bring a government issued photo ID (Driver’s License, State ID, Military ID, Tribal ID or passport) and be prepared to have your picture taken.

Your U Card never expires, even after you leave the University. If you ever return as a student, staff or faculty member, your card will be reactivated based on your current University role status (student enrollment or staff/faculty role status). If you do not have your U Card upon returning to the University, you may be subject to a replacement card fee.

A UCard Office is located at the information desk on the lower level of the St. Paul Student Center.

Gopher GOLD™ Value
Gopher GOLD Value is money (up to $1,000) you deposit into an online account that connects to your U Card. Gopher GOLD Value is part of the Gopher GOLD Program run by the U Card Office.

You can use your U Card as a quick, easy, cashless way to pay by swiping the magnetic stripe on the back of your card through the merchant's card reader.

Once value has been added to your Gopher GOLD account, you can use your U Card to make purchases all over campus. Gopher GOLD accounts are available to all U Card cardholders.

The Graduate Assistant Employment Office has been established to provide ombudsman services for individuals functioning both as students and as University employees. The office is located in Room 170, Donhowe Building (612-624-7070 or gaesinfo@umn.edu). It handles a range of problems and requests for information.
including those concerning teaching and research opportunities, tax status of graduate student income, and employee benefits. The Graduate Assistant Home Page is located at: http://www1.umn.edu/ohr/gae/index.html

**Graduate Assistant Health Insurance.** You qualify for enrollment in the Graduate Assistant Health Insurance Plan if your employment hours meet a minimum 25% appointment (at least 195 hours per semester). You may pick-up an enrollment packet from the office or at the Graduate Assistant Insurance Office at N323 Boynton Health Service. Health insurance premiums are subsidized by the University on a prorated basis depending on the level of your appointment between 25% (195 hours per semester) and 50% time (390 hours per semester). You are also eligible to enroll your dependents for dependent health insurance under the same plan. For details on the current health insurance plan, go to www.bhs.umn.edu/insurance/graduate/index.htm

**University Catalogs.** Links to graduate education catalogs can be found at: http://www.catalogs.umn.edu/grad/index.html. This page includes links to general information and policies, courses, requirements for master’s and doctorate programs and class schedules.

**International Services** Counseling and advisory services are provided for personnel from other countries by the International Student and Scholar Services, Office of International Education (612-626-7100, Room 190 Hubert H. Humphrey Center, http://www.isss.umn.edu/). This office provides assistance to those seeking information about visa regulations; federal, state and local regulations governing foreign nationals; English language; and other educational, social and personal problems.
Student Mental Health and Stress Management
As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. University of Minnesota services are available to assist you with addressing these and other concerns you may be experiencing. You can learn more about the broad range of confidential mental health services available on campus via http://www.mentalhealth.umn.edu/.

University Counseling and Consulting Services (Minneapolis campus: 109 Eddy Hall and St. Paul campus: 199 Coffey Hall Phone: 612-624-3323, http://www.uccs.umn.edu/) provides assistance to those students who wish to learn more about themselves as they develop in an educational setting. Counseling services include the areas of academic or educational decisions, vocational or career planning, personal or family problems, marital relationships, and other concerns. Assistance is offered to develop reading and study skills. Boynton Health Services also provides a range of mental health services.

The University offers extensive indoor and outdoor athletic facilities and opportunities for use by all students, staff and faculty. The recreational sports program is designed to provide opportunities for students to participate in a wide variety of competitive and noncompetitive, organized and informal sports activities. For detailed information, see: http://recwell.umn.edu/. Gyms are located in Minneapolis and St. Paul http://recwell.umn.edu/facilities/index.php and house basketball, volleyball and racquetball courts, swimming pools, etc. Outdoor facilities include tennis courts and golf courses.

On-campus and off-campus housing
The University of Minnesota offers a limited number of on-campus housing options for graduate students. Approximately 40 spaces are reserved for graduate students in Centennial Residence Hall and University Village apartments. In addition, students can search our off campus listings page for many available apartments or rental houses in the area. Students with families can apply to live in Commonwealth Terrace Cooperative or Como Student Community Cooperative. Additional information may be obtained from the University of Minnesota Housing and Residential Life Offices: Comstock Hall East, 210 Delaware Street SE, Minneapolis. You can also visit their website at http://www.housing.umn.edu/graduate/index.shtml

Bus service between and within campuses
The Campus Connector provides direct bus service between the St. Paul, East Bank, and West Bank campuses approximately every five to 30 minutes from 7 a.m. through midnight, depending on the time of day and academic year. As an added service, some
Campus Connectors offer fast express service connecting St. Paul, East Bank, and West Bank campuses between 7:30 a.m. and 5 p.m. Buses on this schedule can be identified by the Express signs on the front and sides of the bus. Express buses only stop at: Blegen Hall, Weaver-Densford Hall/Transportation & Safety Building, Huron Boulevard Parking Complex, Transitway at Commonwealth Avenue, and St. Paul Student Center. For more details see: http://www1.umn.edu/pts/bus/connectors.html

**Commuting to campus**
Information about the different modes (buses, light rail, biking, walking, carpooling and vanpooling) of commuting to campus can be found: http://www1.umn.edu/pts/

**Parking**
For the latest information on parking, please log onto the web site: http://www1.umn.edu/pts/drivers/index.html.

**Places to Eat on Campus**
A coffee maker, refrigerator and microwave are available in Room 403 of Stakman Hall. There are vending machines located on the first floor in McNeal Hall and second floor of Borlaug Hall. Java City and the Terrace Café are located on the main level of the St. Paul Campus Student Center. Hours are: Java City: 7 a.m. to 7 p.m. Mon – Thurs.; 7 a.m. – 4 p.m. on Fridays. Terrace Café and Subway: 11 a.m. – 6 p.m. Mon – Thurs; 11 a.m. – 3 p.m. Fridays. The Terrace Cafe features Subway sandwiches, custom grilled selections, Pizza and a wide range of to-go salads, sandwiches and bakery items. Hours at all of these cafeterias change during the summer months.

**Police Escort Service**
The University of Minnesota Police Department offers an escort service to the University community. On the St. Paul Campus, the escorts will take you anywhere within Larpenteur on the north, Como Avenue on the south, the Fairgrounds on the east, and several blocks west of Cleveland. The service is available 24 hours a day during the school year. Call 612-624-9255 or for more information visit: http://www1.umn.edu/police/escort.html

More complete information on student facilities and services may be obtained from the University of Minnesota General Information Bulletin, published annually and available from the Information Booth in Williamson Hall (Minneapolis Campus).

**I. Departmental Programs and Events**

**Orientation Program**
An orientation session is conducted for new graduate students in the Department of Plant Pathology yearly. Pertinent information is presented at this session and tours of the department’s facilities are available on request.

Awards Ceremony
An annual awards ceremony is held in the spring to present scholarships and awards to students, employees and friends of the Department. Graduate student scholarships and awards include the Frosheiser Scholarship, the Kernkamp Scholarship, the Stienstra/Meronuck Graduate Student Travel Award, the Elwin L. Stewart Graduate Student Travel award, and the Dueck Scholarship. Other awards include the Civil Service Excellence Awards, Professional Academic Award, Outstanding Alumnus, Faculty Mentor, and Distinguished Friend of the Department. In addition, any members of the department who have received awards and honors from other University programs or professional organizations are recognized at this ceremony.

Other department events include the annual E.C. Stakman softball game (held in September) and the department holiday celebration held in December.

J. Safety Training
The University of Minnesota and the Department of Plant Pathology is committed to providing a safe work environment for all faculty, staff, students, and visitors. To satisfy all legal requirements, your supervisor will provide you with information on the safety training you will need. The Department of Environmental Health and Safety at the University of Minnesota provides the following fact sheet the reviews the safety training requirements:

University of Minnesota Department of Environmental Health and Safety
Research Lab Safety Training Requirements

Purpose
To provide an overview of the safety training requirements for University of Minnesota research laboratories. It is the responsibility of each department and laboratory to:

- identify work place hazards
- identify affected employees
- provide employee access to appropriate hazard information
- train employees regarding hazards in the work place upon initial assignment, annually, and when any new hazard is introduced
- keep training records for five years

Training requirements fall into four areas:

- general lab safety training for all lab workers
● training for specific material use
● lab specific training
● building specific access training

Documentation
All training must be documented. Documentation will be automatically entered into an employee’s PeopleSoft record for Environmental Health and Safety in-person or on-line training listed below. Employees may view their training record and any self-reported training in PeopleSoft through the Office of Human Resource’s Employee Self-Service page, http://www.hrss.umn.edu/. Click on Training Registration/History, log in and scroll down to the bottom of the page.

General Lab Safety Training
All University of Minnesota faculty, staff, and students that work in or supervise individuals working in laboratories are required by law to receive training regarding safety issues and practices in their work place. Training is mandated by both the federal Laboratory Safety Standard and the Minnesota Employee Right to Know Act and is required upon hire, at refresher intervals (at least annually), and whenever a new procedure is introduced. Environmental Health and Safety (DEHS) provides basic safety training for new faculty, staff, and students.

Three web-based tutorials that are mandatory for all lab workers are available at: http://www.dehs.umn.edu/training_newlabsafety.htm
  ● Introduction to Research Safety
  ● Chemical Safety
  ● Chemical Waste Management

Each department has a Research Safety Officer (RSO) to coordinate update training. Training updates can also be satisfied by repeating the DEHS training modules. In addition, researchers are welcome to utilize the DEHS catalog of the policies, procedures, training requirements, forms, and record-keeping information as necessary to fulfill health and safety requirements. The catalog is available at: http://www.dehs.umn.edu/ressafety_HSR.htm

Specific Material Use Training
In addition to the above general training, work with the following materials requires additional training:

Bloodborne and Other Pathogens
If work involves human blood, human body fluids, human cells (including cell lines), unfixed human tissue, and/or infectious agents (viruses, bacteria, fungi, rickettsia, prions).
Hazardous Shipping
Required for workers who package and ship hazardous materials, including infectious substances or diagnostic specimens.

Controlled Substance users must complete training through Regulatory Affairs, https://webapps-prd.oit.umn.edu/training/category.jsp?category=CONTSUBST

Animal Users must complete training through IACUC, http://cflegacy.research.umn.edu/iacuc/training/

Radiation training is required by the Nuclear Regulatory Commission (NRC) for persons who work in or frequent a radioactive materials area. Further information is available at: http://www.dehs.umn.edu/rad_training.htm

Lab Specific Training
Each Principal Investigator and/or laboratory supervisor is responsible for ensuring that employees are provided with training about the specific hazards (chemical, physical, and biological) in their laboratory work area. Training must include required procedures and personal protective equipment to reduce the risk of exposure. Training must be provided at the time of an employee's initial work assignment and prior to assignments involving new potential exposure situations. Refresher training must be provided annually. All training, including lab specific, must be documented. See above section on documentation.

Building Specific Access Training
Open design lab buildings may require documentation of some types of training in order for workers to be granted building access. Building management will communicate the training requirements to individuals when building access is requested.

When you have completed any safety training, you and your supervisor must sign the documentation and provide a copy to the Department Research Safety Officer, Todd Burnes, either by e-mail burne002@umn.edu or place a copy in his mail box located in the Plant Pathology Department Office, 495 Borlaug Hall and retain a copy in the red safety portfolio located in your laboratory. Check to make sure you have the proper safety training and documentation. If you have any question, feel free to contact Todd Burnes.
II. Graduate Study in Plant Pathology: Policies and Guidelines

A. Summary for New Students in Plant Pathology (2015-2016)

The Department of Plant Pathology offers graduate majors leading to the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees. In addition, the Department offers the M.S. or the Ph.D. degree with an emphasis in Molecular Plant Pathology. Students in the molecular emphasis will enhance their ability to design and use molecular approaches to investigate plant disease, increase their knowledge of basic science and explore emerging strategies for disease control. All students entering the M.S. or Ph.D. programs are expected to have a strong background in basic sciences. Graduate education is designed to help students learn the scientific discipline of Plant Pathology, develop independent and team research skills, and develop communication skills needed by professional scientists. Students seeking experience in teaching and extension activities will find abundant opportunities within and external to the curriculum.

Graduate students select a Plant Pathology graduate faculty adviser who assists them in forming an advisory committee appropriate to their course of study and thesis research project. The selection of a thesis research project for M.S. and Ph.D. degree students is often based upon the research interest of the faculty adviser and funding opportunities.

Prerequisites and Admission Status

Master’s degree applicants must have a sound college background in the basic biological and physical sciences and mathematics, including 35 semester credits in biology with at least one course in each of the following areas: botany, zoology, genetics, plant physiology, and microbiology. Applicants must also have completed at least one course in inorganic chemistry, organic chemistry, biochemistry, and physics. If deficiencies exist in the prerequisites, they must be corrected during the first year of the graduate programs. These courses cannot be counted as part of the degree program.

All students accepted into the department with a B.S. degree are admitted initially into the M.S. degree program. After a minimum of two semesters, exceptionally well qualified individuals may petition to change their degree status to a Ph.D. program. Documentation (including evidence of competent writing skills, e.g., publications, proposal for Ph.D. research program) for the change in degree status will be evaluated by the student's Graduate Advisory Committee and the Graduate Admissions and Recruitment Committee along with the Director of Graduate Studies. The decision by these two committees and the Director of Graduate Studies to allow a change of status must be unanimous and must also be approved by the Graduate Student Services and Progress (GSSP) office. Criteria for the change include scholastic standing, potential for success in completing a Ph.D. and writing competency. Ph.D. applicants must satisfy all the prerequisites for the M.S. degree program in Plant Pathology or have a Master’s degree in Plant Pathology or in a field of natural science.
III. The M.S. Degree Program

A. General UM Requirements

Registration Requirement for the Master's Degree – Whenever possible, students should register for a full load of 14 credits every spring and fall semester and 6 credits every summer semester using thesis credits (PIPa 8777) to meet this requirement.

Master's degree students are required to complete at least 60 percent of the coursework for their official degree programs (excluding thesis credits) as registered University of Minnesota graduate students. With approval of the adviser, Director of Graduate Studies in the major (and Director of Graduate Studies in the minor, if the courses are for a designated minor), and GSSP, transfer coursework may make up the remaining 40 percent (maximum) of the degree coursework (see Transfer of Credits for the Master's Degree below).

Masters students can find a chart for degree completion steps at:
https://www.grad.umn.edu/sites/grad.umn.edu/files/MastersA.pdf

Official Program for the Degree – By the time students have completed 10 credits, they must file an official graduate degree plan with Graduate Student Services. The graduate degree plan form is available online at
(http://policy.umn.edu/sites/policy.umn.edu/files/forms/otr198.pdf) or from the Graduate Student Services & Progress (GSSP) office in 160 Williamson Hall. In this form, students are required to list all coursework, completed and proposed, that will be offered in fulfillment of degree requirements, including transfer work (Transfer of Credits for the Master's Degree above). If a foreign language is required for the degree, it also is specified on the degree program form. A graduate degree plan form, approved by GSSP, must be on file before reviewers’ report, examination, or graduation forms can be released to the student.

Committee assignments and updates are initiated by the student. Updates to student committee should be submitted at least two weeks prior to any examination to allow time for processing and updates to the record. To request an update to an examination committee of record, please go to Assign/Update Examination Committee. After logging in, students with existing committee assignments will see their current members listed and can use the form to request a change in membership. Students will be sent a confirmation email upon approval.

Adviser assignments – The “Graduate Student Adviser Assignment” form has replaced use of the Degree Program Form for updating adviser assignments for graduate students. This form may only be used by plan level coordinators (i.e., DGS Assistants) and DGSs. If your advisor changes, please contact the DGS to make the change.
Changes in Approved Program – Once approved, the degree plan must be fulfilled in every detail to meet graduation requirements. Program changes should be requested by completing a GSSP petition form (https://www.grad.umn.edu/current-students-forms/forms-masters).

Preferred Performance Level Requirements – The Graduate School has a preferred performance level GPA of 2.80 (on a 4.00 scale) for courses included on any official Master's degree program. Courses with grades of A, B, C (including a C-), and S may be included in the official degree program, but grades of S are not calculated in the GPA. Students pursuing a Plan A Master's degree are required to register for thesis credits (8777); these registrations are not graded and therefore cannot be used to meet course credit requirements. At least two-thirds of the course credits included on any degree program must be taken A-F.

Thesis Adviser, Thesis Committee, and Mandatory Meeting – All graduate students in Plant Pathology are assigned an advisor at the beginning of their graduate program and are required to select a Graduate Advisory Committee and convene a meeting of this committee by the end of the first year in residence.

Thesis Proposal – A thesis proposal must be submitted to the Graduate Advisory Committee by the end of the first year in residence. The proposal must include a literature review, research objectives, and the proposed research approach and methods. The proposal should be considered as a working document that may be modified at a later time as deemed appropriate. It is suggested that each student's Graduate Advisory Committee meet at least once after the initial thesis proposal meeting to review progress of the student and to provide constructive advice on the thesis research. Students are encouraged to contact their Graduate Advisory Committee members throughout the course of their research program to seek their advice and expertise. It is also important that the Committee be kept informed of the direction and progress of the student's research throughout his or her tenure in the department.

Thesis Credits (Plan A only) – Students must enroll for a minimum of 10 Master's thesis credits (8777) before receiving the degree. Students cannot include thesis credits in the total program credits when determining maximum transfer allowed. They also cannot transfer thesis credits from other graduate institutions, double-count thesis credits between two Master's degrees, or use thesis credits to meet the minimum major and related field coursework requirements for the degree. If possible, students should register for a full load of 14 credits every spring and fall semester and 6 credits every summer semester using PlPa 8777 credits to meet this requirement. For example, if you are taking for fall semester the courses: PlPa 5480 (3 credits), PlPa 8102 (3 credits), and
PlPa 8200 (1 credit), totaling together 7 credits, you should then register for 7 credits of PlPa 8777 to equal a total of 14 credits.

**Master's Thesis (Plan A only)** – Students must demonstrate familiarity with the tools of research or scholarship in their major field, the ability to work independently, and the ability to present the results of their investigation effectively, by completing a Master's thesis. Further information on thesis preparation is provided elsewhere in this handbook.

**Thesis Reviewers (Plan A only)** – The thesis is read by the entire examining committee, which is approved by the GSSP office. This examining committee consists of at least three members: two representatives from the major field and one from the minor or a related field.

To permit faculty to allocate sufficient time to read the thesis and decide whether it is ready for defense, students must notify their adviser and the other members of their final oral committee at least two weeks in advance that the thesis will be delivered on a particular date. All members of the examining committee must then have at least two weeks to read the thesis after it has been delivered. These are minimum standards.

The entire committee must be unanimous in certifying that the thesis is ready for defense, as indicated by their signatures on the thesis reviewers report form (located online with the Graduation Packet Request forms).

**Final Examinations (Plan A only)** – Candidates for the Master's degree, Plan A, must pass a final oral examination. The final examination covers the major field and the minor or related fields, and may include any work fundamental to these fields. The final oral for the Master's degree is conducted as a closed examination, attended by only the student and the examining committee.

Final examinations are coordinated by the chair of the student's examining committee. The following conditions must be met in order to allow the remote participation (e.g., telephone conference call, Skype, etc.) by graduate examination committee members and/or the student in the doctoral preliminary oral examination, and the master's and doctoral final oral examinations. The chair of the examining committee is responsible for guaranteeing that all of the conditions outlined below have been satisfied.

- All members of the examining committee and the student must agree to the remote participation.
- The Director of Graduate Studies must approve the request to allow remote participation in the examination.
- All participants must be able to hear each other at all times.
- Appropriate versions of all visual or text materials (e.g., slides, videos, handouts) must be available to all participants.
- The integrity of the examination process must be guaranteed by some form of proctoring if the candidate is not physically present on the University campus or if no other committee member is physically present with the candidate.
- Provisions must be made for secret balloting during the votes by examiners and for signing the examination report form.
- The chair of the examining committee must recess the examination immediately if any technical problems interfere with the proceedings for more than a few moments.
- All participants must be notified ahead of time of the options for recessing the examination.
- The chair of the examining committee must guarantee that all the above conditions have been satisfied.
- Ideally, the student will be physically present on campus for the examination except in circumstances that pose a hardship.
- It is recommended that no more than one committee member participate remotely in the examination.
- The student should file a written notice with the DGS informing her/him of the fact that there will be remote participation in the examination, and specifying who will participate remotely. Ideally, the notice should be filed two weeks in advance of the scheduled exam.
- The most reliable, robust technology should be used to facilitate remote participation.
- The student and all members of the committee should be aware in advance of the potential problems that could arise in the examination, and the actions that will be taken to address potential problems should they arise (e.g., recessing the exam).

The results of the examinations are reported to the GSSP office on the final examination report form (located online with the Graduation Packet Request forms). A majority vote of the committee, all members voting, is required to pass the examination. A student who fails the examination may be terminated from the graduate program or may be allowed, on unanimous recommendation of the examining committee, to retake the examination, providing the reexamination is conducted by the original examining committee.

**B. M.S. Degree Requirements**

Plan A (thesis) and Plan B (non-thesis) both require a minimum of 14 course credits in plant pathology and 6 course credits in a minor or related field. In addition, Plan A requires 10 thesis credits (PIPa 8777). Plant B students are also required to complete one to three projects totaling ca. 120 hours. The content and procedures for completing the projects(s) are to be determined and approved by the student’s major adviser and the director of graduate studies.
All students (M.S. and Ph.D.) in plant pathology who enroll in courses with dual designations (5000/8000) are required to enroll at the 8000 level.

**Language Requirements:**
A foreign language is generally not required. However, knowledge of a foreign language may be necessary for students doing research in non-English-speaking countries.

**Final Exam:**
The final exam is oral

Requirements of a minor for students majoring in other fields is a minimum of 6 credits for a master's minor. The department offering the minor should be consulted for exact requirements.

**Standard Track**
- Principles of Plant Disease (PlPa 5480), 3 credits. (Prerequisite) – Questions on the suitability of previous coursework for meeting this introductory plant pathology course requirement must be referred to the director of graduate studies.
- Plant Virology (PlPa 8104), 2 credits
- Plant Bacteriology (PlPa 8105), 2 credits
- Plant Pathology Seminar (PlPa 8200), 1 credit
- Research Ethics in Plant and Environmental Sciences (PlPa 8123), 0.5 credit
- A five to seven week in-classroom Teaching Experience (TE) (PlPa 8090, topic: “Teaching Plant Pathology” 1 credit
- Seminar or workshop on teaching methods

In addition, students are required to enroll in a minimum of 5 credits in the following courses chosen in consultation with the director of graduate studies, adviser, and graduate advisory committee:
- Diseases of Forest and Shade Trees (PlPa 5003) 3 credits
- Field Plant Pathology (PlPa 5202) 2 credits (offered every other summer)
- Introduction to Fungal Biology (PlPa 5203) 3 credits
- Current Topics in Molecular Biology (PlPa 5300) 1 credit
- Plant Genomics (PlPa 5301) 3 credits
- Ecology, Epidemiology, and Evolutionary Biology of Plant-Microbe Interactions (PlPa 5444) 3 credits
- Plant Disease Resistance and Applications (PlPa 5660) 3 credits
- Molecular Plant-Microbe Interactions (PlPa 8103) 3 credits

**Molecular Track (Plan A only)**
M.S. students wishing to emphasize molecular plant pathology must complete the following course requirements:
- Laboratory in Molecular Biology and Biotechnology (BioC 4125) or equivalent – Prerequisite course
- All students lacking an introductory Plant Pathology course are required to complete Principles of Plant Disease (PlPa 5480), 3 credits. (Prerequisite course - questions on the suitability of previous coursework for meeting the introductory plant pathology course requirement must be referred to the Director of Graduate Studies.
- Plant-Microbe Interactions (PlPa 8103) 3 credits
- Current Topics in Molecular Plant Pathology (PlPa 5300) 1 credit
- Plant Pathology Seminar (PlPa 8200), 1 credit
- Research Ethics in Plant and Environmental Sciences (PlPa 8123), 0.5 credit
- A five to seven week in-classroom Teaching Experience (TE) (PlPa 8090, topic: “Teaching Plant Pathology” 1 credit
- Seminar or workshop on teaching methods

Suggested courses for the supporting field credits:
- Plant Genetics (PlPa 5301) 3 credits
- Molecular and Cellular Genetics of Plant Improvement (Agro 8241) 3 credits
- Microbial Genomics and Bioinformatics (BioC 5361) 3 credits
- Molecular and Genomic Evolution (EEB 5221) 3 credits
- Molecular Cell Biology (GCD 5036) 3 credits

M.S. student enrollment in PLPA 8200 will entail preparation and delivery of a literature-based seminar on a topic unrelated to the student’s thesis research. The requirement of a literature-based seminar provides an opportunity to broaden perspectives in our field and explore topics of interest outside the student’s research realm.

M.S. students are required to complete a Teaching Experience for a minimum 5-7 week period in a Plant Pathology (PlPa designator) course or other course approved after agreement among the student, the student’s adviser, and the Teaching Experience coordinator. M.S. students enroll for 1 credit in PlPa 8090 under the topic “Teaching Plant Pathology”. This course will appear on the student’s transcript as “Teaching Plant Pathology”. Teaching experiences will be graded in Plant Pathology 8090 on a Pass/Fail basis by the instructor of the course for which they TA.

In addition, M.S. students are required to enroll in a seminar or workshop on teaching methods. Enrichment courses on teaching are offered through the Center for Teaching and Learning (CTL), the Digital Technology Center (DTC), and UM Libraries. Each fall semester, a “New TA Orientation”, sponsored by the CTL can be used to fulfill the seminar/workshop requirement. The TE coordinator will be required to approve course selection to fulfill the M.S. TE requirement.
International students are encouraged to access one or more of the diverse on-campus opportunities for enhancing their English language skills prior to completing the Teaching Experience. Comprehensive activities are offered through the University of Minnesota's Center for Teaching and Learning International TA program (including for-credit courses, individual consultations and training, workshops, and online resources); the College of Science and Engineering annual Teaching and Language Kickoff Orientation; the UM Writing Studies Department; and informal activities such as Toastmasters. Further information is available from the Director of Graduate Studies or the student's adviser.

Two examples of possible student programs are outlined below:

**Example I: Practitioner Program:**
- Principles of Plant Disease (PlPa 5480), 3 credits
- Field Plant Pathology (PlPa 5202) 2 credits
- Introduction to Fungal Biology (PlPa 5203) 3 credits
- Plant Virology (PlPa 8104), 2 credits
- Plant Bacteriology (PlPa 8105), 2 credits
- Research Ethics in Plant and Environmental Sciences (PlPa 8123), 0.5 credit
- Plant Pathology Seminar (PlPa 8200) 1 credit
- Thesis Credits (M.S.) (PlPa 8777) 10 credits total
- Minor or supporting field credits 5 credits
- Teaching Experience (PlPa 8090) 1 credit

**Example II: Pre-Doctoral Program:**
- Principles of Plant Disease (PlPa 5480), 3 credits
- Introduction to Fungal Biology (PlPa 5203) 3 credits
- Plant Virology (PlPa 8104), 2 credits
- Plant Bacteriology (PlPa 8105), 2 credits
- Ecology, Epidemiology, and Evolutionary Biology of Plant-Microbe Interactions (PlPa 5444) 3 credits
- Research Ethics in Plant and Environmental Sciences (PlPa 8123), 0.5 credit
- Plant Pathology Seminar (PlPa 8200) 1 credit
- Thesis Credits (M.S.) (PlPa 8777) 10 credits total
- Minor or supporting field credits 5 credits
- Teaching Experience (PlPa 8090) 1 credit
IV. The Ph.D. Degree Program

A. General UM Requirements

The Doctor of Philosophy degree is awarded chiefly in recognition of high attainment and ability in a special subject field as demonstrated by passing the required examinations covering both a candidate's general and special subject fields, and by preparing and successfully defending a thesis based on original research that makes a significant contribution to knowledge in the student's field.

Registration Requirement for the Doctoral Degree – Whenever possible, students should register for a full load of 14 credits every spring and fall semester and 6 credits every summer semester using thesis credits (PlPa 8888) to meet this requirement.

The Department of Plant Pathology allows doctoral students who have not yet passed the preliminary oral exam to register for doctoral thesis credits (PlPa 8888) without completing any pre-thesis credits (PlPa 8666). Advisor approval is required to register for PlPa 8888 if the oral prelim has not been completed. An example: if you are taking for Fall Semester the courses of PlPa 5480 (3 credits), PlPa 8102 (3 credits), and PlPa 8200 (1 credit), totaling together 7 credits, you should then register for 7 credits of PlPa 8888 to equal a total of 14 credits.

Doctoral students are required to enroll for a minimum of 24 thesis credits (PlPa 8888) while completing their research. Students need to have advisor approval in order to register for these thesis credits before passing their preliminary oral examination.

Doctoral Pre-Thesis Credits (8666) – These credits are available for doctoral students who have not yet passed their preliminary oral examination and do not receive advisor approval to register for PlPa 8888 and need to be registered in the Graduate School to meet requirements of agencies or departments outside the Graduate School (e.g., loan agencies). Doctoral pre-thesis credits are not graded.

A chart for degree completion steps for PhD students can be found at:
https://www.grad.umn.edu/sites/grad.umn.edu/files/doctoral%20phd%20edd.pdf

These steps include:

Official Plan for the Degree – Students are expected to file an official graduate degree plan during their second year of study; the specific semester depends on individual major field requirements. Students should submit their completed degree program forms to the GSSP office at least one semester before the term in which they plan to take the preliminary oral examination. The graduate degree plan is available online at (https://www.grad.umn.edu/current-students-forms/formsdoctoral). In this form, students
are required to list all coursework, completed and proposed, that will be offered in fulfillment of degree requirements in the major field and in the minor field or supporting program, including any transfer work. If the student's major field requires proficiency in one or more foreign languages, these should be specified as well. An approved degree plan degree is required to be on file with GSSP before the student is permitted to schedule the preliminary oral examination.

After logging in, students with existing committee assignments will see their current members listed and can use the form to request a change in membership. Students will be sent a confirmation email upon approval.

Minor Field or Supporting Program Work – For the doctoral degree, a minimum of 12 credits must be completed in the minor field or supporting program. With a traditional minor, this work is in a single field related to the major; the minor field must be declared before the student passes the preliminary oral examination. If the student chooses a supporting program, it must be composed of a coherent pattern of courses, possibly embracing several disciplines.

Official Doctoral Candidacy – Doctoral candidacy is established when a student passes the preliminary oral examination (this includes a grade of "pass with reservations").

Preliminary Written Examination – All doctoral students are required to pass a written examination in the major field. This examination covers all work completed in the major field and may include any work fundamental to this field. The results of the examination are reported on the preliminary written examination report form, signed by the student's adviser and the Director of Graduate Studies in the major field. It is the student's responsibility to ensure that this form is received by the Graduate Student Services and Progress office, 160 Williamson Hall, before scheduling the preliminary oral examination.

Preliminary Oral Examination – Students take the preliminary oral examination after completing a substantial part of the coursework and passing the preliminary written examination, but before writing the dissertation.

Preliminary Oral Examining Committee – Committee assignments and updates are initiated by the student. Updates to the preliminary oral committee should be submitted at least two weeks prior to any examination to allow time for processing and updates to the record. To request an update to an examination committee of record, go to [http://www.grad.umn.edu/students/forms/doctoral/index.html](http://www.grad.umn.edu/students/forms/doctoral/index.html) and access the “Assign/Update Preliminary Oral Examination Committee” link. The examining committee includes a minimum of four members: three (including the student's adviser) from the major field and one from the minor field or supporting program.
All assigned members must be present at the preliminary oral examination; the absence of any member results in an invalid examination.

**Scheduling the Preliminary Oral Examination** – It is the responsibility of the student to schedule the preliminary oral with the examiners and with the GSSP office, at least one week in advance. [http://www.grad.umn.edu/students/prelimschedule/index.html](http://www.grad.umn.edu/students/prelimschedule/index.html)

Before the oral examination can be scheduled, an approved degree plan form must be on file in the GSSP office, along with a written examination report form indicating that the student has passed the preliminary written examination.

**Preliminary Oral Examination Content and Outcome** – All doctoral students are required to pass an oral examination in the major field. The preliminary oral examination covers the major field, the minor field or supporting program, and any work fundamental to these areas, including possible plans for thesis research. Unlike the final oral examination, the preliminary oral is conducted as a closed examination, attended by only the student and the examining committee.

**Ph.D. Thesis** – The thesis must demonstrate the student’s originality and ability for independent investigation, and the results of the research must constitute a contribution to knowledge. Moreover, the thesis must exhibit the student’s mastery of the literature of the subject and familiarity with the sources. The subject matter must be presented with a satisfactory degree of literary skill.

**Thesis Adviser, Thesis Committee, and Mandatory Meeting** – All graduate students in Plant Pathology are required to select a major Adviser and Graduate Advisory Committee and convene a meeting of this said committee by the end of the first year in residence.

**Preliminary Thesis Proposal** – A preliminary thesis proposal must be submitted to the Graduate Advisory Committee by the end of the first year in residence. The proposal will include a literature review, research objectives, and the proposed research approach and methods. The proposal should be considered as a working document that may be modified at a later time as deemed appropriate. It is suggested that each student's Graduate Advisory Committee meet at least once after the initial thesis proposal meeting to review progress of the student and to provide constructive advice on the thesis research.

Students are encouraged to contact their Graduate Advisory Committee members throughout the course of their research program to seek their advice and expertise. It is also important that the Committee be kept informed of the direction and progress of the student's research throughout his or her tenure in the Department.

For the Ph.D. degree, it is advised that the entire Examining Committee be involved as the Advisory Committee, whenever possible.
Delivery of the Thesis to Thesis Reviewers – To permit faculty to allocate sufficient time to read the thesis and decide whether it is ready for defense, students must notify their adviser and other members of the final oral committee at least two weeks in advance that the thesis will be delivered on a particular date. All members of the examining committee must then have at least two weeks to read the thesis after it has been delivered.

When signing the thesis reviewers report form, the reviewers have three options: the thesis is acceptable for defense as presented; the thesis is acceptable for defense with minor revisions; or the thesis requires major revisions and is not acceptable for defense as presented.

The reviewers must be unanimous in certifying that the thesis is ready for defense, whether as presented or with minor revisions.

Final Oral Examination – All doctoral students are required to successfully defend their theses in a final oral examination and graduate within five calendar years after passing the preliminary oral examination. To be eligible for the final oral examination, a student must have completed all work on the official doctoral degree plan form; must have passed both the written and oral preliminary examinations; must have maintained active status; and must have satisfied the thesis credit requirement. In addition, the thesis must have been certified by the readers as ready for defense.

Scheduling the Final Oral Examination with the Graduate School – Doctoral students are expected to schedule their final oral exam online at least one week in advance with both their Committee and the Graduate School.

How the electronic exam scheduling process works:

The electronic scheduling process must be initiated by the student. To do so, the student clicks on the Final Oral Examination Scheduling link listed on Graduate Student Services and Progress (GSSP) office Doctoral Forms web page.

From the Final Oral Examination Scheduling page, the student clicks on the link to schedule the exam, and then logs in using their Internet ID and password.

The student enters the final oral examination date and clicks “submit.” (Note that all other required student information fields are automatically populated via PeopleSoft.)

The GSSP office will notify the student by email regarding any outstanding final oral exam requirements, and how to fulfill those requirements. The student will also receive confirmation from the GSSP office upon the Graduate School’s authorization of the final oral examination.

The DGS assistant will now automatically be copied on all of the above-mentioned emails so that the graduate program office is informed of the Graduate School’s review and authorization of their student’s final oral exam.
A minimum of 10 weeks must intervene between the preliminary oral and the final oral examinations.

**Final Oral Examining Committee** – The committee must consist minimally of four members: three (including the student’s adviser) from the major field and one from the minor field or supporting program. Larger committee sizes may be appropriate for many students. At least one committee member from the minor field or supporting program should represent a graduate program and budgetary unit other than that of the student's major.

Although the student’s adviser serves as a member of the final oral examining committee, another member of the committee is designated as the chair and functions in this capacity at the final oral examination. The chair must be a senior member or affiliate senior member of the graduate faculty and may be from either the major field or the minor field or supporting program. The chair and other members of the final oral examining committee are approved by the CFANS Graduate Office upon recommendation of the faculty in the major field at the time the student’s thesis proposal is approved.

All committee members must be present at the examination; the absence of any member results in an invalid examination. The following conditions must be met in order to allow the remote participation (e.g., telephone conference call, Skype, etc.) by graduate examination committee members and/or the student in the doctoral preliminary oral examination, and the master's and doctoral final oral examinations. The chair of the examining committee is responsible for guaranteeing that all of the conditions outlined below have been satisfied.

- All members of the examining committee and the student must agree to the remote participation.
- The Director of Graduate Studies must approve the request to allow remote participation in the examination.
- All participants must be able to hear each other at all times.
- Appropriate versions of all visual or text materials (e.g., slides, videos, handouts) must be available to all participants.
- The integrity of the examination process must be guaranteed by some form of proctoring if the candidate is not physically present on the University campus or if no other committee member is physically present with the candidate.
- Provisions must be made for secret balloting during the votes by examiners and for signing the examination report form.
- For doctoral final orals, arrangements must be made for a public presentation by video link, with opportunities for question and answer from the audience.
- The chair of the examining committee must recess the examination immediately if any technical problems interfere with the proceedings for more than a few moments.
- All participants must be notified ahead of time of the options for recessing the examination.
- The chair of the examining committee must guarantee that all the above conditions have been satisfied.
- Ideally, the student will be physically present on campus for the examination except in circumstances that pose a hardship.
- It is recommended that no more than one committee member participate remotely in the examination.
- The student should file a written notice with the DGS informing her/him of the fact that there will be remote participation in the examination, and specifying who will participate remotely. Ideally, the notice should be filed two weeks in advance of the scheduled exam.
- The most reliable, robust technology should be used to facilitate remote participation.
- The student and all members of the committee should be aware in advance of the potential problems that could arise in the examination, and the actions that will be taken to address potential problems should they arise (e.g., recessing the exam).

**Form of the Final Oral Examination** – The final oral examination consists of a seminar in which the candidate presents the thesis and to which the scholarly community is invited. The seminar may take place only after the thesis has been judged ready for defense. The examination is limited to the candidate's thesis subject and relevant areas. It will not exceed three hours. A closed meeting between the candidate and the appointed examining committee immediately follows the thesis presentation.

Immediately after the examination, the candidate is excused from the room and a secret written ballot is taken before discussing the examination. Following the discussion, a second and final vote is taken.

**Reporting the Results of the Final Oral Examination** – To be recommended for the award of the doctoral degree, candidates must receive a vote with no more than one dissenting member of the total examining committee. If the student has clearly passed or clearly failed the examination and all members have signed the final examination report form, the report form must be submitted to the GSSP office no later than the last business day of the anticipated month of graduation.

The adviser should be responsible for ensuring the inclusion of appropriate modifications and required revisions, if any, in the final thesis. The final oral examination report form should not be signed and submitted to the GSSP office until all revisions have been made. Once the final report form has been returned to the GSSP office indicating that the student has either passed or failed the final oral examination, a hold is placed on the
student’s records to prevent further registration in the Graduate School. If the adviser indicates that the student needs additional time to make minor revisions to the thesis before it is submitted to the Graduate School, the student is permitted to register for one additional semester. Once the thesis has been submitted, no further registration in the Graduate School is permitted unless the student has been admitted to professional development status or to another major field.

B. Ph.D. in Plant Pathology

A standard track and a molecular track are offered for the Ph.D.

Students in the doctoral program usually spend a minimum of three years beyond the Master's degree to obtain the Ph.D. degree. All Ph.D. students must fulfill curriculum requirements outlined below. Doctoral students also complete a minor field of study or supporting courses in two or more disciplines, written and oral preliminary examinations, a thesis based on original research, and an oral defense of the thesis.

The Ph.D. requires a minimum of 17 course credits in plant pathology, which may include 5000 and 8000 level courses in plant pathology or others approved by the Director of Graduate Studies taken before admission into the Ph.D. program. In addition, students are required to complete 12 credits in a minor or supporting program, and 24 thesis credits (PlPa 8888). Upon admission, students should meet with the Director of Graduate Studies, adviser, and graduate advisory committee to determine a suitable course program.

Standard Track

Ph.D. students must take the following courses (if not taken previously):

- Principles of Plant Disease (PlPa 5480), 3 credits (Prerequisite course - questions on the suitability of previous coursework for meeting the introductory plant pathology course requirement must be referred to the Director of Graduate Studies.
- Plant Virology (PlPa 8104), 2 credits
- Plant Bacteriology (PlPa 8105), 2 credits
- Ecology, Epidemiology, and Evolutionary Biology of Plant-Microbe Interactions (PlPa 5444) 3 credits
- Molecular Plant-Microbe Interactions (PlPa 8103), 3 credits
- Research Ethics in Plant and Environmental Sciences (PlPa 8123), 0.5 credit
- Supervised Classroom/Extension Teaching Experience (PlPa 8005) 2 credits OR Teaching in Higher Education (GRAD 8101) 3 credits
- Two semesters of Plant Pathology Seminar (PlPa 8200) 2 credits total including any credits taken during the M.S. program at the University of Minnesota)
Complete a minimum of one full semester in-classroom Teaching Experience (TE) (2 credits PlPa 8090, topic: "Teaching Plant Pathology")

Molecular Track

Ph.D. students wishing to emphasize molecular plant pathology must complete the following course requirements (if not taken previously):

- Principles of Plant Disease (PlPa 5480), 3 credits (Prerequisite course - questions on the suitability of previous coursework for meeting the introductory plant pathology course requirement must be referred to the Director of Graduate Studies.
- Laboratory in Molecular Biology and Biotechnology (BioC 4125) or equivalent – Prerequisite course
- Plant Virology (PlPa 8104), 2 credits OR Plant Bacteriology (PlPa 8105), 2 credits
- Current Topics in Molecular Plant Pathology (PlPa 5300) (2 semesters required) 2 credits total
- Plant Genomics (PlPa 5301) 3 credits
- Molecular Plant-Microbe Interactions (PlPa 8103), 3 credits
- Research Ethics in Plant and Environmental Sciences (PlPa 8123), 0.5 credit
- Two semesters of Plant Pathology Seminar (PlPa 8200) 2 credits total including any credits taken during the M.S. program at the University of Minnesota
- Supervised Classroom/Extension Teaching Experience (PlPa 8005) 2 credits OR Teaching in Higher Education (GRAD 8101) 3 credits
- Complete a minimum of one full semester in-classroom Teaching Experience (TE) (PlPa 8090) 2 credits, topic: "Teaching Plant Pathology")

Suggested courses for the 12 supporting field credits:

- Chromosomal and Molecular Genetics of Plant Improvement (Agro 8241) 3 credits
- Statistical Genetics and Genomics (AnSc 5200) 4 credits
- Microbial Genomics and Bioinformatics (BioC 5361) 3 credits
- Computational Techniques for Genomics (Csci 5481) 3 credits
- Molecular Evolution (EEB 5221) 3 credits
- Molecular Cell Biology (GCD 5036) 3 credits
- Advanced Genetics and Genomics (GCD 8131) 3 credits
- Structure, Function, and Genetics of Bacteria and Viruses (MICa 8002) 4 credits

Laboratory Rotations: With approval of the Director of Graduate Studies, Ph.D. students pursuing the molecular emphasis may, in their first year of residence, spend 12 weeks in one research laboratory or a 6-week period in each of two laboratories. The
effort will be the equivalent to a half-time research assistantship. The purpose is to broaden the students’ background in laboratory methods and research approaches before beginning Ph.D. thesis research.

**Seminar Requirements** – PhD students in Plant Pathology are required to enroll in two semesters of PLPA 8200 (Plant Pathology Seminar) for a total of two credits (one credit in each of two semesters). One credit earned in PLPA 8200 as part of an MS degree will be credited toward the PhD degree; thus students entering a PhD program who had previously earned an MS in Plant Pathology from the University of Minnesota are required to enroll in PLPA 8200 only one additional time.

As part of the planning process for PhD thesis research, all PhD students must enroll in PLPA 8200 at least once during their first year in residence and must prepare and deliver a seminar focused on planned thesis research. This seminar will be developed in consultation with the graduate advisor(s) and the course instructor(s) according to guidelines provided in the course syllabus. The requirement of a thesis research-based seminar provides an opportunity for the student to become familiar with literature and historical perspectives associated with his/her own research, as well as relevant contemporary research approaches, techniques, and analytical strategies. This seminar also provides a framework for setting and discussing thesis research goals and objectives. Note: The thesis research-based seminar requirement is effective for all PhD students beginning the program in fall 2013 and later.

In addition to the thesis research-based seminar and during a distinct semester, PhD students required to enroll in PLPA 8200 twice as part of their degree program will prepare and deliver a literature-based seminar on a topic unrelated to the student’s thesis research. The requirement of a literature-based seminar provides an opportunity to broaden perspectives in our field and explore topics of interest outside the student’s research realm.

In all cases, additional course requirements may apply at the discretion of the course instructor(s).

**Required Teaching Experience** – All Ph.D. students are required to complete a teaching experience as part of their degree program.

All Ph.D. students are required to complete either PLPa 8005 or Grad 8101. PLPa 8005 includes a requirement that the student serve a teaching experience for a full semester Plant Pathology course or other course approved after agreement among the student, the student’s advisor, the TA coordinator, and DGS. Students taking GRAD 8101 (3 cr) are still required to complete a full semester teaching experience in a Plant Pathology (PLPa designator) course.
**Written Preliminary Exam** – The written preliminary exam will be held once annually. In September of each year, the Director of Graduate Studies will meet with that group of students planning to take the exam during the next year. The dates for the exam will be selected in January by mutual agreement of the students and the Director of Graduate Studies. The 3 days of the exam fall within a single week usually in June. If any student(s) choose not to take the exam on the predetermined dates, they must wait to take the exam with the next year’s group of students.

The structure of the exam will be as follows: the examination will consist of 3 half-day sessions during which students will be expected to answer a total of 9 questions, 3 per day. Questions test general knowledge of Plant Pathology such as would be covered in required courses. All faculty members are invited to submit questions.

Day 1: Cellular, Molecular, and Physiological Plant Pathology. On Day 1, there will be two categories of questions. Approximately one-half of the questions on the exam will address cellular, molecular, and physiological plant pathology; the other half of the questions will cover the broad range of general plant pathology. Students will be required to answer at least one question among those offered in the area of cellular, molecular, and physiological plant pathology. Students will answer two additional questions from either category.

Day 2: Whole Plant and Population-Based Plant Pathology. On Day 2, questions will be approximately equally divided between whole plant and population-based plant pathology, and general plant pathology. Students will be required to answer at least one question among those offered in the area of whole plant and population-based plant pathology. Students will answer two additional questions from either category.

Day 3: Individualized exam. The adviser will be responsible for providing the exam committee with questions to be answered by the student on the final day of the exam. Students will be required to answer three questions on the final day of the exam; the adviser will determine whether or not the student will have a choice of questions. The adviser may, at his or her discretion, choose to include questions from members of the student’s Graduate Advisory Committee.

To successfully pass the written preliminary exam, students must achieve a score of 70% averaged over all 9 questions, i.e. it is permitted for students to receive scores on individual questions lower than 70% as long as the average is above 70%. Students pass or fail the entire exam; the possibility of passing or failing only a portion of the exam is not allowed.
**Oral Preliminary Exam** – Following successful completion of the written preliminary exam, students must pass an oral preliminary exam administered by members of the Ph.D. examination committee.

**Final Exam** – The final examination is oral, centering on the defense of the Ph.D. thesis.

**Minor Requirements for Students Majoring in Other Fields** - A minimum of 12 credits are required for a doctoral minor. The department offering the minor should be consulted for exact requirements.

**Language Requirements** – A foreign language is generally not required. However, knowledge of a foreign language may be necessary for students doing research in non English speaking countries.

International students are encouraged to access one or more of the diverse on-campus opportunities for enhancing their English language skills prior to completing the Teaching Experience. Comprehensive activities are offered through the University of Minnesota's Center for Teaching and Learning International TA program (including for-credit courses, individual consultations and training, workshops, and online resources); the College of Science and Engineering annual Teaching and Language Kickoff Orientation; the UM Writing Studies Department; and informal activities such as Toastmasters. Further information is available from the Director of Graduate Studies or the student's advisor.

V. **Program-wide Requirements and Opportunities**

A. **Policy for Appointment of Graduate Student Advisory Committee and Submission of Preliminary Thesis Proposal**

In order to facilitate progress of students through their graduate programs and to ensure early involvement of students' Graduate Advisory Committee, the following steps are required of all students:

1. All graduate students in Plant Pathology will be required to select a Graduate Advisory Committee and convene a meeting of the committee by the **end of the first year in residence.**

2. A preliminary thesis proposal should be submitted to the Graduate Advisory Committee at its first meeting. The proposal will include a literature review, research objectives, and the proposed research approach and methods. The proposal should be considered as a working document that may be modified at a later time as deemed appropriate.
3. Each student's Graduate Advisory Committee should meet at least once a year after the initial thesis proposal meeting to review progress of the student and to provide constructive advice on the thesis research.

Students are encouraged to contact their Graduate Advisory Committee members throughout the course of their research program to seek their advice and expertise. It is also important that the Committee be kept informed of the direction and progress of the student's research throughout his or her tenure in the Department. For the Ph.D. degree, it is advised that the entire Examining Committee be involved as the Advisory Committee, whenever possible.

B. Financial Support for Plant Pathology Graduate Students: Research Assistantships

The length of time for Research Assistantship (RA) financial support for an M.S. degree is 2.5 years from the time of admission and 3.5 years for a Ph.D. degree for those students already possessing an M.S. degree. If for some reason it appears that a student will require additional time beyond the stated periods, a petition may be filed to the Graduate Admissions/Recruitment Committee (see the section on Graduate Student Progress Evaluation Report) for an extension of financial support if the student and his or her adviser believe there are special circumstances beyond the student's control that have prevented the student from finishing within the allotted time period. Extensions of financial support for research assistantships will be for periods of no longer than six months in duration.

It is intended that all students on RA's will be subject to the constraints regarding time limits as described above, regardless of the source of financial support. However, in the case of RA's that are supported through extramural funds, exceptions may be made where unusual circumstances exist that would necessitate extending the time limit for support beyond those stated above. In these instances, the project leader should discuss these circumstances and come to agreement with the Director of Graduate Studies and the Department Head before an extension is granted.

Graduate student policy for probationary status: Students with a GPA of 2.8 or less for two semesters will be placed on probation. If no improvement occurs in an additional semester, their graduate study will be terminated. A cumulative GPA of at least 2.8 is required to graduate from the program.

C. Policies for Serving a Teaching Experience in the Plant Pathology Graduate Program

All M.S. and Ph.D. students who were admitted into the PlPa Graduate Program are required to complete a teaching experience as part of the degree program.
MS students
MS students are required to complete a teaching experience for a minimum of 5 weeks in a Plant Pathology (PIPa designator) course or other course approved after agreement among the student, the student's advisor, and the TE coordinator. The TE coordinator is required to approve course selection to fulfill the MS TE requirement.

MS students will enroll in PIPa 8090 and receive 1 credit for their teaching experience. Graduate students will be graded in Plant Pathology 8090 on a Pass/Fail basis by the instructor of the course for which they complete their teaching experience. This course will be designated “Teaching Plant Pathology” to reflect the activity undertaken by the student and will be listed as such in the official transcripts.

In addition, MS students will be required to enroll in a seminar or workshop on teaching methods.

Please note: these courses are generally offered in the weeks preceding the start of the fall and spring semesters. Information on the current offerings that meet this requirement are available on the CTL website: http://www1.umn.edu/ohr/teachlearn/index.html

Ph.D. students:
PhD students are required to complete PIPa 8005 (2 credits). This course includes a requirement that the student complete a full semester teaching experience in a Plant Pathology course or other course approved after agreement among the student, the student's advisor, and the TE coordinator. The TE experience can be done concurrently with PIPa 8005 or during a subsequent semester. The final grade for PIPa 8005 will be given upon completion of the TE experience.

Students may substitute GRAD 8101 (3 cr) for PIPa 8005, Students using Grad 8101 as their formal pedagogical course must also fulfill the requirement of serving a teaching experience for a full semester in a Plant Pathology course.

Teaching experiences will generally take place in the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>When taught</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIPa 1005 Plants Get Sick Too</td>
<td>Fall</td>
<td>Kurle</td>
</tr>
<tr>
<td>PIPa 2001 Introductory Plant Pathology</td>
<td>Spring</td>
<td>Dill-Macky</td>
</tr>
<tr>
<td>PIPa 3003 Diseases of Forest &amp; Shade Trees</td>
<td>Spring</td>
<td>Blanchette</td>
</tr>
<tr>
<td>CFAN 1501 Biotechnology, People,</td>
<td>Spring</td>
<td>Young</td>
</tr>
</tbody>
</table>
What will be expected? The work load will depend on the course and the percent assistantship you receive. Generally, you will be expected to teach a lab section and assist with grading or other similar course responsibilities for the semester.

D. Annual Student Progress Review

All graduate students will be reviewed annually by their advisor and the DGS. The review will serve to evaluate progress and identify potential problems with the academic progress of each student. Students are required to document their progress annually on the appropriate Graduate Student Progress Evaluation and Tracking Form which will be sent out annually by the Plan Level Coordinator.

E. Financial Issues

Tuition Remission for Graduate Assistants

Tuition reimbursement will be limited to tuition costs for a maximum of 14 credits per semester (fall, spring, and summer). Generally, students take only 6 credits during the summer, which is considered full time status. Costs for any additional credits taken in a given semester will not be reimbursed. Note: A manual adjustment will be made by the Graduate Assistants Office for professional degree programs that set their own tuition schedule. The cap for these programs will be at the top of their full-time tuition band.

FICA (Social Security and Medicare Taxes)

All graduate students employed at the University must meet two conditions for exclusion from FICA tax withholding: 1) students must enroll for a minimum of 6 credits per semester, or 1 credit per semester for Ph.D. students who have passed the oral prelim exam and are working on a dissertation; 2) appointments must not exceed a combined total of 50 percent or 20 hours per week (this applies to all University employment, including assistantships, during the summer as well as the academic year).

F. Policy to Proceed Directly to the Ph. D. degree from the Bachelor of Science (B.S.) Degree

All students accepted into the department with a B.S. degree are admitted initially into the M.S. degree program. After a minimum of two semesters, exceptionally well qualified individuals may elect to change their degree status to a Ph.D. program. Documentation (including evidence of competent writing skills, e.g., publications, preliminary thesis proposal for Ph.D. research program) for the change in degree status will be submitted to and evaluated by the student's Graduate Advisory Committee and the
Graduate Admissions and Recruitment Committee along with the Director of Graduate Studies. The decision by these two committees and the Director of Graduate Studies to allow a change of status must be unanimous and must also be approved by the Graduate School. Criteria for the change include scholastic standing, potential for success in completing a Ph.D. and writing competency. Ph.D. applicants must satisfy all the prerequisites for the M.S. degree program in Plant Pathology or have a Master’s degree in Plant Pathology or in a field of natural science.

After a change of status has been made, a student may elect to return to an M.S. program. However, this must be done prior to the time of the Ph.D. preliminary written exam. After this time, failure of the written exam, failure of the oral exam, failure in research, etc., will not constitute an automatic return to M.S. status.

To graduate, all requirements for the appropriate degree program must be completed.

**G. Plant Pathology Graduate Student Internships**

Internship opportunities can provide students with unique exposure to research in other environments, including private industries, federal agencies, other countries, or other universities. Because of their value to the graduate student experience, the Department of Plant Pathology will offer credit (PlPa 8090) for internships of 3-12 weeks duration. In addition, the Department has developed a small pool of funds that will be awarded competitively to provide travel funds and short-term research assistantship support for students over the course of the internship. Students interested in pursuing an internship are encouraged to contact prospective individuals with whom they may wish to work, or to work with their adviser and Graduate Advisory Committee in exploring potential options. Students are urged to plan ahead!

Students desiring an internship will be required to prepare a 4-6 page proposal for the internship, including a summary of internship goals, description of specific activities, location for the internship, justification for the location, and explanation of how the internship will enhance their graduate program. The internship proposal must include letters of support from both the proposed host and the graduate adviser. Internship proposals must also include a request for and justification of PlPa 8090 credits to be assigned to the internship experience. We expect internship experiences are likely to be assigned from 2-8 credits (S/N)--depending upon their length and the activities involved. Finally, if departmental funding is requested, the internship proposal must include a detailed budget on travel, lodging, per diem, and miscellaneous expenditures.

Internship proposals will be reviewed by the Graduate Admissions and Recruitment Committee in January and June of each year. Proposals are accepted anytime during the year but should be submitted several months before the planned internship. The
Graduate Admissions and Recruitment Committee will approve or recommend revisions to internship proposals, and recommend funding accordingly. Because funds are limited and may sometimes be tied to specific internship experiences (e.g. international experiences), full funding of all internship proposals is not guaranteed.

Within 30 days of the conclusion of the internship, students will be required to submit to the Graduate Admissions and Recruitment Committee a brief written report summarizing their internship experience, including specific accomplishments, contributions to the student’s program, effects on future research and career plans, and any plans for continuing collaborative interactions with the host. In addition, students are required to present a seminar on their internship experience and develop a brief PowerPoint presentation on their experience for posting on the department’s website.

**H. Graduate Student Seminar Attendance Policy**

The Plant Pathology Seminar is an important part of student learning and professional development, providing exposure to areas of plant pathology that might not be presented in PlPa courses. While enrollment in the Plant Pathology Seminar (PlPa 8200) is only required of students in the semester(s) in which they present a seminar, all graduate students in the Plant Pathology Graduate Program are required to attend Plant Pathology seminars throughout the duration of their enrollment in the program. In the event that a course conflict or research obligation prevents a student from attending three or more seminars in a given semester, a student may request to have this requirement waived by submitting a request to the DGS in writing. Any such request should be made prior to missing a third seminar in any given semester.
I. APPENDICES

Appendix A

A. Graduate School Forms

Graduate School forms are available on the Graduate School web page - http://www.grad.umn.edu/students/forms/index.html
Appendix B

B. By-Laws of the Graduate Student Assembly in Plant Pathology

ARTICLE I - GENERAL
Section 1: The official name of this organization shall be the Students in Plant Pathology Assembly.
Section 2: The Students in Plant Pathology Assembly shall operate as a non-profit organization.
Section 3: The Students in Plant Pathology Assembly shall abide by the applicable rules and policies of the University of Minnesota pertaining to student organizations.
Section 4: This Assembly shall exist for the following purposes: a. To provide academic activities of timely interest to members on contemporary aspects of plant pathology and related sciences. b. To provide social activities and events for the membership. c. To participate in formulating and implementing policy of the Department of Plant Pathology according to the department's Constitution and By-Laws.

ARTICLE II - MEMBERSHIP
Section 1: Voting membership is open to all Plant Pathology students at the University of Minnesota.
Section 2: Membership is open to all students without regard to race, creed, color, sex, national origin, or handicap.
Section 3: Graduate and undergraduate students in Plant Pathology, or students of faculty who are members of the Department of Plant Pathology, shall become active members by attending any regular meeting of the organization. An Assembly member shall be considered inactive when he/she is not present at two consecutive meetings.
Section 4: Any member may be impeached for misconduct (for example - failure to perform duties, attendance, misuse of funds, etc.). The member/officer shall be given a seven (7) day notice and an opportunity to defend him/herself. This impeachment vote shall require a 2/3 majority vote.

ARTICLE III - OFFICERS
Section 1: The officers of this organization shall consist of Chairperson, Vice-chairperson, and Secretary/treasurer.
Section 2: All officers must be currently enrolled students at the University of Minnesota. Exceptions to the requirement are permitted for graduate students upon receipt of a letter from the Director of Graduate Studies of the student's department certifying that the student is actively pursuing a degree.
Section 3: Officers shall be elected before the end of spring, assume responsibilities on the first day of summer quarter, and serve for a period of one year. Nominations for officers shall be made and seconded at a regularly scheduled meeting. The Secretary/treasurer shall distribute a secret ballot to all members, and officers shall be elected by plurality of the votes returned to the Secretary/treasurer.

Section 4: The duties of the officers are as follows:
a) Chairperson - Call and preside over all regular meetings of the organization and serve as Chairperson of the Executive Committee. Act as official representative of the club at other meetings and events.

b) Vice-chairperson - Assist the chairperson and assume his/her responsibilities when he/she is absent. The person shall serve as the graduate student representative on the Council of Graduate Students, or the person shall find another graduate student to serve as COGS representative.

c) Secretary/treasurer - Record and produce minutes of and attendance at all meetings. Handle the organization's correspondence. Handle all financial transactions of the organization. Maintain thorough and accurate records of all transactions. Produce financial reports during the first week of each academic quarter. Administer election of officers as described in Section 3.

ARTICLE IV - COMMITTEES
Section 1: Executive Committee - Consists of the elected officers and all committee officers. Sets meeting dates for the organization. Sets membership dues with approval of the membership. Determines committee assignments. Acts on behalf of the organization during the summer.

Section 2: Special committees may be established to carry out special assignments as mentioned in the organization's by-laws or as approved by the membership at a regular meeting.

ARTICLE V - MEETINGS
Section 1: A regular meeting shall be held once each month during the academic year. A special meeting may be called and convened by the Executive Committee or by a petition of ten percent of the active membership.

Section 2: A quorum shall be present in order to conduct official business of the organization. A quorum shall consist of 50 percent of the active membership plus one.

Section 3: Decisions of the organization shall be enacted by a majority vote of the active membership present.

Section 4: Members shall receive a written notice one week in advance of all meetings.

Section 5: Members may submit signed absentee votes to the Secretary/Treasurer for any issue listed on the agenda. This action shall maintain active status for an individual.

ARTICLE VI - FINANCIAL MATTERS
Section 1: The organization shall not provide monetary gain, incidentally or otherwise to its directors or membership.

Section 2: Unless otherwise specified by the membership at the time of dissolution of the organization, residual assets shall be distributed to the following not-for-profit organizations according to the proportions below:

Department of Plant Pathology (University of Minnesota) 100%

ARTICLE VII - BY-LAWS
Section 1: By-laws may be proposed by the membership and may be adopted or amended by a majority vote of those present at a meeting when a quorum is present.

ARTICLE VIII - AMENDMENTS

Section 1: Amendments to the constitution may be proposed by any member of the organization. Such proposals shall be submitted in writing to the Executive Committee for a first reading to the membership at the regular meeting prior to the meeting at which the proposed amendment is to be voted on.

Section 2: Duly proposed amendments shall be submitted to a vote of the active members providing a quorum is present. A two-thirds majority vote in favor shall be required for adoption of such amendment.
Appendix C

C. Mutual Responsibilities in Graduate Education at the University of Minnesota

Approved by the Graduate School Executive Committee 5/28/97; Amended 11/28/00

Preamble

A major purpose of graduate education at the University of Minnesota is to instill in each student an understanding of and capacity for scholarship, independent judgment, academic rigor, and intellectual honesty. Graduate education is an opportunity for the student to develop into a professional scholar. Graduate research and teaching assistantships offer an "apprenticeship" experience in the academic profession as well as financial support. It is the joint responsibility of faculty and graduate students to work together to foster these ends through relationships that encourage freedom of inquiry, demonstrate personal and professional integrity, and foster mutual respect. This shared responsibility with faculty extends to all of the endeavors of graduate students, as students, employees, and members of the larger academic community.

High quality graduate education depends on the professional and ethical conduct of the participants. Faculty and graduate students have complementary responsibilities in the maintenance of academic standards and the creation of high quality graduate programs. Excellence in graduate education is achieved when both faculty and students are highly motivated, possess the academic and professional backgrounds necessary to perform at the highest level, and are sincere in their desire to see each other succeed.

The following principles illustrate what students should expect from their programs and what programs should expect from their students, to help achieve this excellence.

Principle 1: Information About Policies and Procedures

The Graduate School and graduate programs are responsible for providing students and prospective students with access to information about their graduate program, areas of specialization, degree requirements, and average time to completion of degrees. Graduate programs are responsible for providing access to information about graduate student financial support in the program, such as the prospects for fellowships, assistantships or other financial support and the proportion of students receiving financial support. In addition, graduate programs should provide students and applicants with information about career experiences of graduates of the program. All such information should be presented in a format that does not violate the privacy of individual students. Programs are encouraged to provide relevant information in their handbooks, websites or other readily accessible formats.
Students are responsible for keeping themselves informed about current policies of their program and the Graduate School that affect graduate students. Students and alumni also have a responsibility to respond to program inquiries about their career development.
**Principle 2: Communication About Academic Status**

The Graduate School and graduate programs are responsible for providing students with information about their individual academic status: who in the Graduate School and in their graduate program is responsible for communicating to them about admission issues and progress through the degree program, how the communication will take place, and the possibility for appeal to a third party for assistance in resolving disputed issues. Students are responsible for communicating with the Graduate School and their graduate program about changes in their circumstances that affect their status and progress toward the degree.

**Principle 3: Research Contributions**

Individual faculty as research directors are responsible for providing students with appropriate recognition for their contributions at conferences, in professional publications, or in applications for patents. It is the faculty member's responsibility to clarify the principles for determining authorship and recognition at the beginning of any project.

Students are responsible for discussing their expectations regarding acknowledgment of research contributions or intellectual property rights with the appropriate person(s) in the research team, preferably early in the project.

**Principle 4: University Governance**

Departments and graduate programs are responsible for defining specific opportunities for student participation on committees as they deem appropriate. The University recognizes that graduate students make important contributions to governance and decision making at the program, department, college, Graduate School and University level; specific roles for participation are defined at each level by the relevant governing bodies.

Students are responsible for participating in University governance and decision making that enrich the campus community.

**Principle 5: Respectful Employment Conditions**

University faculty and staff are responsible for assuring that graduate students are able to conduct their work, as students or students/employees, in a manner consistent with professional conduct and integrity, free of intimidation or coercion. Students who are employees also have the protection of all University employment policies and laws. Graduate programs are responsible for providing clear communication to students about the possibility for appeal to a third party for assistance in resolving disputed issues.
Students are responsible for reporting unprofessional conduct to the appropriate body or person, as defined in the academic or employment grievance policy; they should be able to do so without fear of reprisal. Students are responsible for acting in a respectful and fair manner toward other students, faculty, or staff in the conduct of their academic work or work they may do in connection with an assistantship.

**Principle 6: Conditions of Employment**

The University (through its departments, research projects or other employing units) is responsible for providing to prospective graduate assistants a written offer of financial support before a response to the offer is required. Such communication must indicate their salary and the terms and conditions of their appointment, including the general nature of the work they will be performing, duration of employment, and whether and how this employment is tied to their academic progress. The details of specific teaching or research assignments may need to await later written clarification. Students are responsible for accepting the conditions of employment only if they believe they are qualified and able to complete the tasks assigned. Students have a responsibility for communicating in writing any changes in their circumstances that affect their ability to fulfill the terms and conditions of their employment.

**Principle 7: Safe Work Environment**

Supervisors are responsible for providing a safe working environment for graduate students, and for developing and publicizing safety policies and training programs to achieve that goal.

Graduate students are responsible for helping to maintain a safe working environment, for adhering to safety policies, for participating in training programs and for reporting safety violations to the proper authority.

**Principle 8: Responsible Conduct of Research**

Students are responsible for carrying out their research in a responsible manner. The faculty and Graduate School are responsible for ensuring that students receive training and guidance in the responsible conduct of research as appropriate for each field.
Appendix D

D. Plant Pathology Seminar – PlPa 8200

Graduate Student Seminar Policy

The graduate student seminar is a class in which students will have the opportunity to practice and develop good scientific communication skills. Students will summarize current literature and critically examine the research topic. The seminar should provide each student with an opportunity to explore an area of plant pathology that they may not otherwise investigate. The presentation should be an in depth analysis that evaluates the strengths and weaknesses of the reviewed research. Students should also present what they believe are the next logical steps in advancing this area of research.

The Graduate Student Seminar is like any other formal graduate course taken for credit. The seminar must be evaluated using the Uniform Grading Policy of the University of Minnesota. Grading for the seminar is A – F scale. Students are expected to achieve a grade of B or better for the course. Only the Seminar Instructor(s) or designated stand-ins can assign a letter grade for the student seminar. That does not however preclude others in the audience (other faculty members, P&A personnel, staff and students) from providing qualitative, constructive comments that can only assist the speaker in improving his/her future presentations. We strongly encourage that practice and appreciate any input. Students registered for the class are required to provide peer evaluations for fellow students. The Seminar Instructor(s) and the Seminar Advisor for the student have responsibility to provide assistance, direction and guidance to the student in preparing and practicing for the presentation.

The Seminar Instructor(s) must approve the seminar topic and the choice of the Seminar Advisor for each student in advance. For MS students, the seminar topic must not be related to thesis research. PhD students must enroll in PlPa in two separate semesters. For these students, one seminar based on planned or on-going thesis research and one seminar on a topic unrelated to thesis research must be presented. The Seminar Advisor cannot be the student’s graduate or thesis advisor or a current seminar instructor. The Seminar Instructor(s) have sole authority to determine the appropriateness of any proposed seminar topic.

The faculty Seminar Advisor has all the same responsibilities as an Instructor, working closely with the student advisee and providing all the needed direction and guidance to assist the student in presenting a successful seminar.

The seminar consists of a 50-minute class period. Each student seminar must include adhere to a time frame determined by the seminar instructors and must allow time for
follow up of questions and discussion. The subject of presentation must be immediately relevant to the science of plant pathology.

A seminar presentation will concentrate on a critical review or evaluation of a few key papers in the area of coverage.

A PowerPoint (or similar) presentation is required. The department will reimburse any cost incurred in preparing the illustrations.

Every student giving a seminar shall rehearse the seminar well in advance with the Seminar Advisor, according to the course guidelines.

The abstract must clearly reflect the contents of the seminar presentation and must be immediately relevant to the selected seminar topic. Abstracts will strictly follow guidelines of the American Phytopathological Society Annual Meetings with the addition of a list of key references in journal format.

A seminar abstract is due to the Seminar Advisor 7 working days in advance of the seminar. The Seminar Advisor is expected to provide input and to approve the final version of the abstract.

The approved abstract must be distributed electronically to all members of the department at least 2 days prior to the scheduled seminar.

The Seminar Instructors and/or the Seminar Advisor will meet with the student speaker soon after the seminar to review the evaluations and communicate the final letter grade.
Appendix E

E. Departmental Scholarships

DISBURSEMENT PROCEDURE FOR THE FRED I. FROSHEISER SCHOLARSHIP

Qualifications: Graduate student majoring in plant pathology at the University of Minnesota. Candidate must have demonstrated outstanding abilities in scholarship, research and all aspects of graduate studies based on at least 1 year of a proven performance record in graduate school. This fellowship is a cash award (about $1,000) given only once to a specific awardee. Students are eligible for only one departmental fellowship/scholarship per year.

Submit: Letter of application, resume, and three letters of support (including one from current faculty advisor and, if from another institution, one letter also should be from a former faculty advisor) to Department Administrative Director.

Applications are due to the Honors and Awards Committee by the beginning of April.

DISBURSEMENT PROCEDURE FOR THE M.F. KERNKAMP FELLOWSHIP

Qualifications: Graduate student with a minimum of one calendar year in residence and majoring in plant pathology at the University of Minnesota. Candidate must have demonstrated outstanding abilities in scholarship, research and all aspects of graduate studies, including participation in departmental activities. Scholarship is not awarded on basis of financial need. This fellowship is a cash award (about $1000) given only once to a specific awardee. Students are eligible for only one departmental fellowship/scholarship per year.

Submit: Letter of application, resume, and three letters of support (including one from current faculty advisor) to Chair of the Honors and Awards Committee by early April.

DISBURSEMENT PROCEDURE FOR WARD C. STIENSTRA AND RICHARD A. MERONUCK GRADUATE STUDENT TRAVEL AWARD

This award was established by Professor Emeritus and Retired Extension Plant Pathologist Dr. Ward C. Stienstra and Dr. Richard A. Meronuck, Extension Plant Pathologist, deceased March 18, 2000, to recognize outstanding graduate student research and to support student participation in professional scientific meetings. A cash award of approximately $750 will be given once to an awardee during their studies at the University of Minnesota. Two awards are to be given each year.
Qualifications: Graduate students majoring in Plant Pathology at the University of Minnesota.

Submit: Letter of application to Chair of the Honors and Awards Committee by early April. Letter should: identify the professional scientific meeting to be attended, date and location of meeting; extent of applicant’s participation (e.g., present paper, host poster, chair session, attend committee meeting, etc.); and a statement of how the applicant’s research will assist disease diagnosis and/or plant disease management.

DISBURSEMENT PROCEDURE FOR THE ELWIN L. STEWART GRADUATE STUDENT TRAVEL AWARD

This award was established by Professor Elwin L. Stewart to recognize outstanding graduate student research and to support student participation in professional scientific meetings. A cash award of approximately $750 will be given once to an awardee during their studies at the University of Minnesota. Up to two awards will be given each year.

Qualifications: Graduate students majoring in Plant Pathology at the University of Minnesota.

Submit: Letter of application to Chair of the Honors and Awards Committee by early April. Letter should: identify the professional scientific meeting to be attended, date and location of meeting; extent of applicant’s participation (e.g., present paper, host poster, chair session, attend committee meeting, etc.); and a statement of how the applicant’s research will assist disease diagnosis and/or plant disease management.
Appendix F

F. Membership in Professional Societies

Opportunities exist for students to become members of professional societies. The advantages of this association are many. Once a graduate student accepts a research assistantship, that person is, in fact, a professional scientist because an assistantship is not a scholarship--one is paid for the performance of an investigation. As a benefit of membership, each organization provides one or more journals and has a placement service for help in employment upon graduation. During one's graduate career, a student is encouraged to present a paper or a poster at the annual meetings and usually only members are accorded this privilege. Similarly one must be a member to publish in the society journal, although only one of the authors on the paper needs to be a member. This policy varies with the society. Usually theses are written using the format of a given professional journal in which the student is most likely to publish his/her results. Several societies are appropriate societies to join. A few are listed below:


Mycological Society of America, http://www.msafungi.org/

Other societies you may be interested in include:
- American Association for the Advancement of Science
- American Institute of Biological Sciences
- Botanical Society of America
- Canadian Phytopathological Society
- Society of Nematologists
Appendix G

G. List of Key People

**Department Head:** James Bradeen - jbradeen@umn.edu, 5-9736, 495 Borlaug Hall

**Associate Administrator:** Kristen Opitz - freyx083@umn.edu, 5-9226, 495 Borlaug Hall

**Administrative Support Specialist:** Chana Johnston, chanaj@umn.edu, 5-4705, 495 Borlaug Hall

**Director of Graduate Studies:** Carol Ishimaru cishimar@umn.edu, 6-7154, 208 Stakman Hall

**Communications Coordinator and Graduate Student Plan Level Coordinator:** Dylan VanBoxtel, vanbo022@umn.edu, 6-6839, 495 Borlaug Hall

**Computer Support Specialist:** cfanshelp@umn.edu

**Lab Safety Officer:** Todd Burnes - burne002@umn.edu, 5-6231, 101 CL.

**Seminar Committee:**
  Departmental Seminar Program Coordinator:
    Matthew Rouse – rous0089@umn.edu, 5-1243
  Graduate Student Seminars:
    James Bradeen - jbradeen@umn.edu, 5-1211, 312 S

**Standing Committee Chairpersons (Faculty Council):**
  Graduate Education Committee – H. Corby Kistler
  Undergraduate Education Committee – Ruth Dill-Macky
  Science & Outreach Committee – Matthew Rouse
  Awards and Honors Committee – Nevin Young
  Develop, Alumni & Ext Rel Com. – Brian Steffenson
Appendix H

H. Organizational Summary of the College of Food, Agricultural and Natural Resource Sciences

The College of Food, Agricultural and Natural Resource Sciences is comprised of six divisions, fourteen academic units (two are held jointly), seven research and outreach centers throughout Minnesota, the Bell Museum of Natural History, and the Minnesota Landscape Arboretum. The college also participates in many interdisciplinary centers and cooperatives.

Division of Applied Economics
- Department of Applied Economics
- Agricultural Education

Division of Bioresources and Bioenergy
- Department of Bioproducts and Biosystems Engineering (joint with Institute of Technology)

Division of Environmental Science, Policy and Management
- Department of Entomology
- Department of Fisheries, Wildlife, and Conservation Biology
- Department of Forest Resources
- Department of Soil, Water and Climate

Division of Food, Animal and Nutritional Sciences
- Department of Animal Science
- Department of Food Science and Nutrition

Division of Plant Science
- Department of Agronomy and Plant Genetics
- Department of Horticultural Science
- Department of Plant Biology (joint with College of Biological Sciences)
- Department of Plant Pathology

Division for Translational Research and Engagement
- Cloquet Forestry Center
- North Central Research and Outreach Center at Grand Rapids
- Northwest Research and Outreach Center at Crookston
- Southern Research and Outreach Center at Waseca
- Southwest Research and Outreach Center at Lamberton
- UMore Park at Rosemount
● West Central Research and Outreach Center at Morris