

Graduate Student Handbook

Spring, 2002

Version 2.2

Welcome to the HomePage for the Department of Plant Pathology at North Carolina State University. This Department is home to over 30 faculty committed to excellence in Research, Education and Extension. The diversity of interests among the faculty provides a rich environment for scholarship and learning spanning the entire scope of Plant Pathology from developing and delivering plant disease control strategies to competitively funded investigations of plant-microbe interactions. We have a thriving graduate program that benefits not only from strong individual programs within the department but also from the many interdisciplinary research projects and training grants. We encourage you to explore the many opportunities in the Department of Plant Pathology, North Carolina State University and the Research Triangle area through the primary links on this page and other links found throughout this site.

The **mission** of the Department of Plant Pathology is to "Advance knowledge of plant diseases, promote environmentally sound strategies to improve plant health in agricultural, urban and other ecosystems, and provide education in plant pathology for students and citizens of North Carolina and the world." The Department of Plant Pathology will be the leader in education of students and in the advancement, dissemination and application of knowledge of plant disease.

- Getting Started
 - Philosophy of Education
 - Orientation
 - Graduate Student Association
 - Desk Policy
 - Summary of Graduate Policies
 - Advisory Committee Guidelines
- Academic Program
 - Degrees Offered
 - PhD Without MS Option
 - Degree Program Objectives
 - Fellowships & Assistantships
 - Continuous Registration Policy
 - Prerequisites & Audits
 - Courses Offered in Plant Pathology
 - Course Requirements
 - Co-Major in Plant Pathology
 - Plan of Work
 - Minor
 - Statement of Progress
 - Seminar Program
 - Discussion Groups
 - PhD Thesis Proposal
 - Examinations
 - Contingencies for Oral Exams
 - Graduate Certification in Foreign Languages
 - Apprenticeship Training
 - Nusbaum Scholar Award & K. R. Keller Nominee
 - Departmental Services and Facilities
 - Laboratories & Specialized Facilities
 - Greenhouse Facilities
 - Library
 - Photo Lab
 - Travel to Professional Meetings
 - Use of State-Owned Vehicles
- Department Services
- Graduate School Handbook

Philosophy of Education - Graduate Program

June, 1995

Preamble: The faculty and staff of the Department of Plant Pathology at North Carolina State University are committed to providing an atmosphere for excellence in graduate education. We strive to provide personalized education and experience to enable students to reach their intellectual and professional potential. Recognizing that students have a variety of academic and professional goals, the department has the philosophy that graduates should be provided a strong foundation in plant pathology as well as in-depth education and experience in those areas that best fit the goals of the student and the science. Plant pathology is recognized as a unique science composed of contributions from many specialties. It is the goal of the department to provide students with those opportunities necessary to become qualified, well-educated scientists ready to succeed in the twenty-first century.

As a faculty we have the obligation and responsibility of recruiting, admitting, and nurturing students who are first, outstanding scholars with a foundation in the biological sciences and the potential to develop as plant pathologists. Personality traits, which will contribute to a student's success in graduate school, include enthusiasm about science, perseverance, energy, intelligence, vision, innovativeness, trustworthiness, self-reliance, and the ability to communicate effectively. These qualities will be developed further as the student focuses on research, course work, and professional development during their graduate program.

Students should view a graduate program as an opportunity, yet realize that a personal sacrifice of time that includes an intense period of study and research is required to be successful as a graduate student and as a professional. Students obtaining an advanced degree in plant pathology should develop a strong foundation through course work, discussions, seminars, and research in plant pathology. An awareness and understanding of the principles of plant pathology is paramount to success in this discipline as it is with any scientific discipline.

We believe there are three general objectives or program goals that students in plant pathology should accomplish by the time they graduate. These goals include development of 1) a strong foundation in plant pathology at the population, organismal, and cellular level; 2) additional education in the biological and agricultural sciences to meet the specific career goals of each individual student; and 3) experience and professionalism.

1) Foundation in plant pathology Our faculty agree that students must develop a strong foundation in plant pathology. The initial approach is through the core curriculum designed to introduce Masters students to plant-pathosystems and the primary sub-disciplines in plant pathology. The core curriculum as well as other courses must be current and emphasize cognitive thinking skills rather than simple recall of facts. Presently, the core curriculum consists of 12 credit hours including, PP501

Phytopathology I, PP502 Plant Disease: Methods & Diagnosis, PP506 Epidemiology & Control of Plant Diseases, PP590D/790D Special Topics-Plant Microbe Interactions, PP601/801 Seminar in Plant Pathology. The core courses are coordinated such that there is minimal overlap, and in such a way that theory concerning host-parasite genetics, molecular approaches to plant pathology, epidemiology, disease physiology and disease management practices are current and tailored to specific pathogen groups. The core curriculum is structured with theory on the population, organismal, and cellular/molecular level. The basic biological concepts in each of these areas can be applied to plant pathogens and other biological systems, providing both a commonality and diversity for students to pursue selected research interests and career paths. This core curriculum provides more flexibility in scheduling courses in related disciplines, which is vital to keep abreast of changing developments, emphasis, and influence of related disciplines to plant pathology.

Students need opportunities to develop critical thinking skills as they build a foundation in plant pathology. They should be exposed to situations where they can use their knowledge of plant pathology to develop testable hypotheses. Learning to identify the most critical questions which will advance the understanding of the science of plant pathology is one of the most difficult yet important aspects of development as a scientist. Students also need experiences that allow them to critically analyze data, write research papers, and communicate results orally. Thus, students need ample opportunity to develop critical thinking skills in classes, discussions, seminars, and through research. Problem solving can be addressed in all these arenas, but is most emphasized in research. These are attributes that will benefit all students, regardless of career choice.

2) Discipline-based Education in Biological Science: Plant pathology is recognized as a science which is based upon knowledge and techniques of botany, mycology, bacteriology, virology, plant anatomy, plant physiology, genetics, molecular biology, genetic engineering, biochemistry, horticulture, tissue culture, soil science, forestry, chemistry, physics, meteorology, statistics, and other branches of science. Therefore, beyond the core curriculum, in plant pathology students should develop a strong background in the subdisciplines related to their research interest. It is critical that students have a current understanding and are conversant in the discipline or subdisciplines related to their research area, whether this be population biology, cell biology, genetics, soil science, biochemistry or other related disciplines. There is concern that too narrow a focus may limit the student's competitiveness in the ever-changing job market; however, a broad background cannot substitute for competence in one's area of research. Education and experience in plant pathology encompasses many of the biological sciences and can be approached at the fundamental level as well as the applied level. Students should be encouraged to use all approaches possible to solve the research problem.

3) Experience and Professionalism: Students need effective preparation beyond their specific curricula to prepare them for a successful science career. Experiences outside the classroom must prepare students such that the professional skills they develop will be an asset in job placement. In this regard, the advisor has a critical role in mentoring his/her

students that includes the professional development of the student. Effective communication skills (verbal and written), grant-writing, interactions with peers, decision-making, exploration vs. focus, information acquisition and transfer, management, and technical expertise are all essential to successful professionals. The 'Preparing the Professoriate' program sponsored by the Graduate School is one attempt to prepare students professionally. In the future, more opportunities of this sort should become available in this department and across the campus as initiatives from the 'New Framework in Graduate Education' are developed. Documented experience in professional development (i.e. research publications, formal teaching, grants, technological expertise, etc.) are extremely valuable and often a competitive advantage in job placement.

Opportunities to develop communication skills both oral and written cannot be over emphasized. No matter what career objectives a student may have, the ability to communicate information is paramount to success. Students need to take advantage of the many different activities available in the department and in professional societies to hone their communication skills. The teaching assistant experience is one such example; yet, students must be prepared in the principles and techniques that they will teach before they can practice their oral communication skills. Grant writing is another experience whether as a mock proposal for a class or as a contributor to a submitted proposal.

Students should also learn of the importance of building collaborative teams of scientists to approach complex questions. Team building and networking among scientists can take many forms but exposure to modern communication systems should be expected of all students.

An important component of experience and professionalism is the development of both short-term and long-term career goals. For international students, these goals may be well-established, if the student plans to return to an academic or government position in their home country. For US students, short-term goals might include plans for a post-doctoral experience to build on current strengths or gain new skills. Interactions with our faculty and scientists at meetings can be an important avenue for development of career goals. Advisors have a key position as role models in this regard.

The need for diversity of experience and education to allow flexibility for today's job market runs paradoxically to the often narrow focus of the graduate research and education experience. A primary challenge for our department philosophy is to develop professionals that can bridge this gap through graduate education in our department. If past experience is any indication of future success, graduates who have developed the professional qualities described herein should have employment success.

Meeting the Program Goals for our Students: As a faculty, we are continually questioning the effectiveness of the graduate program to meet the needs of students as we prepare them for a career in plant pathology. Both discussion and introspection are signs of a healthy environment for graduate education. We currently have in place an "Institutional Effectiveness Plan" that describes our program objectives, student outcomes and methods for measuring outcomes. This plan will no doubt be modified in

the future as our discussions of an effective graduate education program result in appropriate changes.

One example of a student activity designed to meet program goals is the seminar presentation which builds from a *foundation* in plant pathology and related *disciplines*, invokes *critical thinking skills*, during preparation of the seminar and answering questions at the end of the seminar, and offers *experience and professional development* through organization and delivery of the seminar. Other activities involving students and faculty are numerous such as courses, teaching assistant participation, apprenticeship experiences, discussions, advising and mentoring, coffee break discussions, and research experience including oral paper presentation and manuscript preparation. Each of these program activities relates specifically to one and often more than one program goal. Through continual discussion among faculty and interactions with students, the graduate program will continue to evolve as we strive to improve our program effectiveness for graduate education.

II. ORIENTATION

New student orientation will be held prior to the start of classes each semester. Information about our philosophy of education, Graduate School and Departmental regulations and procedures, The Graduate Student Association and registration requirements will be provided. During the first month in residence, students are asked to have conferences with faculty members representing the various subject-matter areas. These conferences help to familiarize the student with the research, teaching, and extension programs underway in the department. The conferences may also help the student develop special interests within the discipline.

III. Graduate Student Association

Constitution (Revised Spring, 1993)

I. Name of Organization:

The Plant Pathology Graduate Student Association.

II. Objectives:

To act as a liaison between the graduate students and the faculty of the Department of Plant

Pathology for assistance in the functioning of the Department of Plant Pathology when called upon to do so, and to offer suggestions to the department head concerning the improvement of departmental policies and procedures.

Areas of interest to the association include the following:

- A. Grievances which involve both faculty and students and problems unique to graduate students.
- B. Assistance in departmental functions when called upon to do so.
- C. Recruitment and orientation of new graduate students.
- D. Improvement of facilities and curriculum by presenting to the department head suggestions made by the graduate student body and approved by the association.
- E. Assisting in organization of travel arrangements for students to and from scientific meetings and the corresponding accommodations at the meetings.
- F. Any other matter of interest to graduate students.

III. Membership:

The association will consist of all graduate students majoring in plant pathology. There shall be a **Graduate Student Council** representing the GSA. The council of the association shall consist of elected officers. The officers of the council and their duties are as follows:

- A. The officers of the council shall consist of a President, Secretary, Treasurer, Representative to the N.C. State Graduate Student Association, Alternate for the Representative to the N.C. State Graduate Student Association, and a Discussion Group Coordinator.

Nominations will be taken for officers during the latter part of the Spring semester followed by the election of Officers in April. Officers shall serve for a term of one year.

B. To be eligible to be an officer in the council, a student must have been a member of the department for the preceding semester. In case of returning students, this rule is waived. Unless so called to do so under special circumstances, officers shall serve for only one year in any capacity during their tenure as a student.

I. The Discussion Group Coordinator's duties shall be to:

- 1) Assist in the organization of discussion groups each semester.
- 2) Keep a record of present discussion groups and topics for availability to interested students and prepare a written report for the Departmental Annual Summary of Activities that includes name of discussion group, topic, student coordinator(s), faculty advisor(s), and a list of presentation titles, dates, and presenter(s) for each discussion group.
- 3) Keep students informed of the status of discussion groups and the necessary steps of organization and attendance of the various groups.

IV. Meetings:

Typically, one meeting will be held each month of the school year and at other times when the need arises. The President shall see that seven days notice of an upcoming meeting is given to members of the GSA. Special meetings may be called by the President or majority of the student members of the association.

V. Constitution:

This constitution must be adopted by a majority vote of the resident graduate students.

Changes in this constitution may be made at a proposal through the association and must be approved by 2/3 vote of the resident graduate students. However, no vote on any change can take place before 30 days has elapsed since the time of the original proposal to the association.

IV. DESK POLICY

A system as described below for desk assignment has evolved mainly through the efforts of our graduate students.

1. Responsibility for Desk Assignments

The Graduate Student Council President and Officers will be responsible for assigning desk space to new students after consultation with the Director of Graduate Programs and Teaching Coordinator.

Desk assignments within each graduate student office at the time of arrival of the new students will be made by the President and Officers of the Graduate Student Council.

2. Notification of Desk and Office Assignments

Graduate student Council Officers should be informed as soon as possible concerning the acceptance of a new graduate student. Information regarding student's name, address, degree program, adviser (if possible), starting date, etc. should be provided officers so correspondence can be initiated promptly.

3. Priority

Degree students with assistantships, fellowships or scholarships have priority, regardless of the degree program.

Priority 1 - Ph.D. degree students

Priority 2 - M. S. or M. Agr. degree students

Degree students with no assistantships, fellowship or scholarship aid will be assigned desk space in the following priority:

Priority 3 - Ph.D. degree students

Priority 4 - M. S. degree students

Priority 5 - M. Agr. degree students

Priority 6 - Special and/or Provisional students without scholarships

Technicians doing degree work will not be provided a desk.

V. SUMMARY OF GRADUATE POLICIES

1. **Composition of Advisory Committee.** Master's Degrees; minimum of three faculty; Ph.D. Candidates; minimum of four faculty, including minor professor if there is a minor.
2. **Course Credits & Plan of Work.** Master's Degree candidates complete the core curriculum plus electives totaling 30 hours for MS and 36 hours for Master of Plant Pathology (no thesis). PhD candidates take 72 hrs. with up to 18 hrs. transferred from the MS. Core curriculum requirements must be met. The Plan of Work is submitted to the Director of Graduate Programs for departmental approval.
3. **Registration and Residence Requirement.** Students must maintain continuous registration each fall and spring semesters. Students enrolling First Summer Session 1997 and after must register for a minimum of 9 credit hours each semester, if receiving an assistantship or fellowship. Summer session registration is not required. In addition, PhD students must meet continuous residency requirements of 2 units (see Graduate School Bulletin). After minimum credit hour is met, may register for 3 credit.
4. **Academic Standards.** The grades for required courses toward any graduate degree must be at least "C" and a GPA of 3.0 must be maintained. However, a student must maintain at least a GPA of 3.2 to have an assistantship.
5. **Teaching Requirement.** The Department usually requires M. S. candidates to participate as teaching assistants in one course and Ph.D. candidates participate in teaching two courses.
6. **Seminar Presentations.** Master's candidates: 1 PP690 Seminar (given in Departmental Symposium) plus a discussion group each academic year. Ph.D. candidates: 2 PP690 Seminars plus a discussion group each academic year.
7. **Final Examination for the Master's Degree.** Plant Pathology Master candidates take a final oral examination which usually involves an evaluation of their general knowledge as well as that in plant pathology. For Master of Science degree candidates, this final examination includes a defense of the MS thesis as well as an evaluation of general knowledge. The examination is conducted by the Advisory Committee and is arranged with the Graduate School by the Director of Graduate Programs.
8. **Comprehensive (Preliminary) Examination - PhD Degree.** This examination consists of a written and oral examination, usually given at the time most courses have been completed. It is conducted by the Advisory Committee and a representative of the Graduate School is arranged with the Graduate School by the Director of Graduate Programs.
9. **Final Examination for PhD Candidates.** This final oral examination in defense of the dissertation follows the completion of courses listed on the plan of work and preparation of the dissertation. It is also conducted by the Advisory Committee and a representative of the Graduate School and is arranged with the Graduate School by the Director of Graduate Programs. The candidate's seminar is part of the examination.

10. **Time Limits.** M. S. degree: 6 years. Ph.D. degree: 6 years to attain candidacy/10 years total to complete degree requirements.
11. **Patent Policy.** The University Patent Policy specifies that any invention made by a graduate student with the direct or indirect support of the University shall be assigned to the University. A graduate student who is an inventor will receive a share of the royalties from the invention as specified in the University policy. Each graduate student must sign the patent policy agreement on arrival in the department.
12. **Advisory Committee Semi-Annual Report.** A report for each student is filed by the advisor and student with the Director of Graduate Programs. The first report should be filed by the end of the first semester in residence with subsequent reports at six-month intervals.
13. **Annual Leave for Graduate Students.** Students on assistantships may take up to 12 days per year plus the official University holidays. Approval for vacations should be obtained from your advisor and not conflict with your academic obligations.
14. Graduate students will schedule an Exit Interview with the Department Head upon completion of degree requirements. At the same time, students should return University keys to the main office.

VI. Advisory Committee Guidelines

The Advisory Committee system of graduate education is based on the simple principle of shared responsibility. After consultation with the major professor, Department Head, and Director of Graduate Programs the student selects a small group of additional faculty advisors whom he/she believe can be helpful in the attainment of his/her particular educational goals and career aspirations. The advisory committee is established after students meet and discuss their proposed research with as many faculty as possible during the first few weeks of residence. **Upon consultation with the major professor and before potential committee members are asked to serve, the student will submit the names of faculty who would be appropriate for the committee to the Department Head.** After departmental approval, the student will then ask his/her selected committee members to serve. This procedure is intended to provide students with the best advisory committee possible. The group is a voluntary association which functions after approval by the Department Head and Dean of the Graduate School. After departmental approval the request for the Graduate School appointment of the Advisory Committee is made through the Director of Graduate Programs.

Successful operation of the Advisory Committee system depends on the extent and quality of the communications that develops over time between the student and the Committee members, both individually and as a group. Experience has shown that the judgments and decisions arrived at by the student and his/her committee after frank, open, collective discussion offer many benefits in terms of the success of the program.

To encourage timely development of these collective judgments, the Department has established the policy that each student must meet with his/her Graduate Advisory Committee **at least once every six months (Advisory Committee Semi-Annual Report)** during the period of the student's resident study. Each graduate student must take the initiative in calling the meetings and making the necessary practical arrangements. The Semi-Annual Report form (see Appendix) provides a check list for communication about the progress of the student's coursework, thesis research, and professional development. The completed report form is given to the Director of Graduate Programs.

Prior to the first formal meeting of the Committee, the student should also develop the following information in written form:

1. A brief description of informal educational and work experience that relates to the student's potential career as a scientist, teacher, advisory agent or technician.
2. A list of papers, theses, and other experiences in scientific or non-scientific writing.
3. A preliminary outline of the coursework (Plan of Work), language study, thesis research, and apprenticeship experiences desired by the student in the course of his/her graduate education. The tentative Plan of Work should be circulated to members of the Advisory Committee at least one week before the first meeting with the student. The final Plan of Work must be approved by the Advisory

Committee, the Department Head, the Director of Graduate Programs, and the Dean of the Graduate School.

Degrees Offered. The Department of Plant Pathology offers the following degrees: Master of Plant Pathology, Master of Science, and Doctor of Philosophy. The Master of Plant Pathology degree provides students an opportunity for a general education in plant pathology. A thesis is not required but enrichment projects in the field, laboratory, and greenhouse are available to students in both degree tracks. The Master of Science degree is a thesis-track program designed to educate students in basic and problem-solving research with minimum supervision, and to develop their skills in effective communication of results. The Doctor of Philosophy degree dissertation-track program is designed to educate students to conduct independent research, to interpret plant pathological concepts, and to develop communication skills for use in academic, governmental, and industrial environments. Approaches for both the MS and PhD degrees include studies in host-microbe interactions, molecular biology, genomics, epidemiology, and disease management.

PhD without MS option (adopted Spring 1999)

Track I. Applicants to the graduate program in the Department of Plant Pathology may request admission to a PhD program of study following completion of the Bachelor's degree.

Admissions Criteria. The Admissions Committee will consider an applicant's request for the PhD program without the MS based on outstanding credentials. Normally, the committee will look for strengths in an application that may include a combination of a high GPA, strong GRE scores, appropriate coursework as an undergraduate, a well-defined statement of interests and goals, strong letters of recommendation, and/or experience in research outside the classroom.

Course requirements. Students in the PhD without MS option will be required to take the plant pathology core courses. Advanced-level courses taken as an undergraduate at another institution may be substituted for core courses, if competence in a particular area is demonstrated on the PhD diagnostic examination. A total of 72 credit hours is required for the PhD degree.

Demonstration of Progress. Satisfactory progress in research will be assessed by the advisory committee at the end of the first and second year in residence. The advisory committee will transmit yearly to the Department Head a recommendation for continuation, termination, or change to a MS program.

Assistantship duration. Students in the PhD degree program without MS will be considered for renewal of their assistantship on an annual basis for a total term not to exceed 5 years. Benefits and time limits under the Graduate School 'Graduate Student Support Plan' will apply from the date of enrollment at N. C. State University. The intent of the option for the PhD program without the MS is to accelerate the program of study leading to the PhD degree.

Track II. A graduate student admitted to the MS program of study in the Department of Plant Pathology may, at an appropriate time, petition his/her advisory committee and the Graduate Dean to change to a PhD program without completion of the MS degree. The advisor should provide a letter of recommendation to the Department Head and Director of Graduate Programs along with a revised plan of work for the proposed PhD coursework. Course requirements and assistantship time limits under Track I will apply. Eligibility for benefits under the Graduate School 'Graduate Student Support Plan' begin with initial enrollment at N. C. State University .

Degree Program Objectives:

Master of Plant Pathology

1. Educate students to critically evaluate and synthesize plant pathological information.
2. Educate and teach students to communicate effectively with the public and peers.

Graduates will

- be able to understand plant pathological principles and concepts;
- be able to evaluate and synthesize plant pathological information;
- and, be able to communicate effectively plant pathological information.

Master of Science

1. Educate and teach students to conduct discovery (basic) and problem-solving research with minimum supervision;
2. Educate and teach students to communicate effectively with the public and peers.

Graduates will

- be able to apply plant pathological principles and concepts;
- be able to conduct research with minimum supervision;
- be able to communicate effectively plant pathological ideas and techniques;
- and be able to manage programs in academic, industrial, and governmental environments.

Doctor of Philosophy

1. Educate students to conduct independent research and develop communication skills for use in academic, governmental, industrial, or private environments as leaders of their chosen area of expertise.
2. Educate students in plant pathological concepts so they will be able to interpret and communicate theory and technology.

Graduates will:

- be able to conduct and obtain funding for independent research;
- be able to obtain placements and conduct independent programs in academic, industrial, or governmental environments;
- be able to critically evaluate and communicate theory, methodology, and scientific information in a discipline;
- and demonstrate a research, teaching and/or extension focus on significant local, national, and international problems.

Fellowships:

Graduate fellowships and traineeships provide funds to graduate students to assist in the support of their programs of advanced study. Holders of fellowships must register for 9 credit hours each semester but have no service obligation to the University and may devote full time to their graduate programs.

Assistantships:

Graduate assistantships are granted to selected students who normally devote half-time to their research and service duties to their advisor's program. A student must maintain a 3.2 grade point average to stay qualified for an assistantship.

Continuous Registration Policy (June 1995): After a student is admitted to the Graduate School and enrolls for the first time, he/she is required to maintain continuous registration, i.e., be enrolled each semester, excluding summer sessions, until he/she has either graduated or his/her graduate program has been terminated. The following caveats and exceptions apply:

1. A student in good academic standing who must interrupt his/her graduate program for good reasons may request a leave of absence from graduate study for a definite period of time, normally not to exceed one year. The student should initiate the request with the chair of his/her advisory committee and have it endorsed by his/her director of graduate programs before submitting it to the Graduate School. The request should be received by the Graduate School at least one month prior to the first day of the term involved.
2. All students who take their final oral examination or submit their thesis or dissertation to the Graduate School during either summer session must be registered for either the first or second summer session.
3. Students who complete all requirements for the degree prior to the first day of the fall or spring semester or the first summer session may graduate during the next semester or summer session without being registered as long as they were registered in the immediately preceding semester or summer (either session).
4. In order for students to submit their thesis or dissertation to the Graduate School or have their final oral examination after the last day of a semester or summer session but before the first day of the next semester or summer session, they must have been registered in the semester or summer (either session) which

- immediately preceded the date that the thesis or dissertation was submitted or the exam was held.
5. Students whose only remaining requirement for graduation is removal of an IN in a course are not required to be registered to remove the IN and graduate. However, students who do not remove any remaining IN grade(s) in the semester or summer following completion of all other requirements and are not registered during the same semester or summer will be terminated at the end of that semester or summer due to non-compliance with the continuous registration policy.

Prerequisites and Audits:

The following points are summarized based upon university requirement and department policy:

1. All Masters degree students are expected to take the core courses approved February 2001 (listed below). In cases where circumstances dictate, substitutions with justification may be recommended by the Advisory Committee for approval by the Department Head or Director of Graduate Programs.
2. The prerequisite for scheduling PP501 or PP502 is PP315 or equivalent (Graduate Catalog).
3. In scheduling any course for graduate credit, "Consent of Instructor" is implied.
4. The only exception which can be made in 2 above is that, with the consent of the instructor and approval of the department, PP315 may be scheduled concurrently with PP501 or PP502.
5. If PP315 is required, this course must show on the student's record for "Credit" or as an "Audit."
6. One "Audit" is permitted free of charge by the Business Office; but audits do count in calculating the course load permitted (Graduate Catalog 1998, p. 24).
7. Auditors are expected to attend class regularly; the degree to which they must participate in the class beyond regular attendance is optional with the instructor, but this must be explained in writing by the instructor at the beginning of the semester (Graduate Catalog 1998, p. 24).
8. Students with the consent of the instructor and their adviser may "sit in" in certain courses for a few lectures without registering. Attendance for all or the major portion of the semester requires registration as an "Audit."
9. The course requirements for majors should be followed and exceptions or substitutions proposed as indicated.
10. Students and advisers should take steps to see that the above guidelines are followed.

Plant Pathology Course Requirements

Master of Plant Pathology: This is a non-thesis graduate degree. A minimum of 36 credit hours is required, which includes the core curriculum. Credit hours of PP 695 masters thesis research CANNOT be included in the plan of work, however, a maximum of six (6) credit hours of PP 693 masters supervised research may be included.

Master of Science: A core curriculum for the MS degree was adopted in 2001. The core curriculum includes a minimum of 12 credit hours in plant pathology. The core courses should be supplemented with a minimum of 18 credit hours in courses at the 500 or higher level that support the field of study to meet the Graduate School's requirement of 30 credit hours for the Master of Science degree. The Graduate School requires at least 20 credit hours be 500 or higher level courses. A maximum of six (6) credit hours in PP 695 MS Thesis Research can be included in the plan of work. Continuous registration is required. See the Graduate Catalog for other Graduate School caveats.

Core Courses	Title	Semester Hours
PP 501	Phytopathology I	3
PP 502	Plant Disease: Methods & Diagnosis	2
PP 506	Epidemiology & Control of Plant Diseases	3
PP 507/707	Plant-Microbe Interactions	3
PP 601/801	Seminar in Plant Pathology	1
	TOTAL:	12

Masters students also are expected to participate in at least one discussion group per academic year in residence. The student should register for 1 credit hour in a section of PP 610 Special Topics (grade S/U). Teaching Assistant Requirement-MS and Ph.D.: Masters students are expected to assist in one course and Ph.D. students in two courses during their tenure as a graduate student. Students may receive credit for this by registering for PP685/PP885 Supervised Teaching.

Doctor of Philosophy: Students entering the Ph.D. degree program are expected to take the core curriculum outlined for the Master of Science or have had the equivalent at other institutions. In addition to completing the core curriculum, Ph.D. students must include 1 credit hour of PP 809 Colloquium in Plant Pathology, 2 credit hours of PP 801 Seminar in Plant Pathology and at least two other 700-level Plant Pathology courses. Ph.D. students are expected to participate in at least one discussion group per academic year in residence. The student should register for 1 credit hour in a section of PP 810 (grade S/U). Teaching Assistant Requirement-MS and Ph.D.: Masters students are expected to assist in one course and Ph.D. students in two courses during their tenure as a graduate student. Students may receive credit for this by registering for PP685/PP885 Supervised Teaching.

Plant Pathology Minors - MS and Ph.D.: A minimum of nine (9) letter-grade credits (i.e., 500 or 700 level) in Plant Pathology courses. Three credits must be in PP 501.

Other guidelines: This outline serves as a guide to students and advisors setting up major and minor programs in Plant Pathology. In some cases where circumstances dictate, substitutions with justification may be recommended by the Advisory Committee for approval by the Department Head or Director of Graduate Programs.

The Advisory Committee should be appointed and preliminary plans of course work and the thesis/dissertation research project developed during the first semester in residence for Masters and Ph.D. degree programs. The formal plan of work should be submitted to the Director of Graduate Programs for approval before the end of the second semester.

Approved by the Curriculum and Academic Advisory Committee 6 February 2001. Rev. - 10 January 2003.

Requirements for a Co-Major in Plant Pathology - April 2002 (rev. Jan. 03).

See the Graduate School's Graduate Administrative Handbook section 3.13.

A co-major involves two departments and is viewed as majoring in the program of each department. However, one department is considered the primary department. The Graduate School considers the primary department to be the "admitting" department with the co-major being in the second department unless the student requests (and is approved by the Graduate School) a transfer.

A student pursuing a co-major in Plant Pathology should view this the same as earning a degree in Plant Pathology. Thus, a student granted a masters or doctoral degree in Plant Pathology will be expected to fulfill the same requirements as a student who is majoring in Plant Pathology.

Procedures and Requirements:

1. Admission by the Graduate School and the department of the co-major.
2. Academic admission into the Department of Plant Pathogen by the Departmental Admissions Committee and approval by the Department Head. A copy of the student's application package from the admitting department should be provided the Plant Pathology Director of Graduate Programs who will consult with the Plant Pathology admissions committee for a recommendation to the Department Head.
3. Fulfillment of the Plant Pathology core curriculum courses and any other requirements for a major in Plant Pathology as set forth by the Departmental Graduate Handbook. See Plant Pathology Course Requirements.
4. Additional courses as required by the student's advisory committee to meet the Graduate School's minimum of 30 credit hours for the M.S. or 72 credit hours for the Ph.D.

PROCEDURE:

Upon admission to the graduate program in both departments, the student writes a letter to the Dean of the Graduate School stating that it is the student's intent to seek a co-major in [state the departments]. The student also states who the co-advisors are, one from each department. If a doctoral student, at least one co-advisor must have full status in the graduate faculty. The Directors of Graduate Programs in each department also must attach a statement that this request has been approved by the respective departments. For Plant Pathology students initiating this request, it has worked well when this information is sent to the Graduate School in a single package. Thus the student making the request should bring the letter addressed to the Dean of the Graduate School and a written, signed statement from the DGP of the co-major department to the Plant Pathology Director of Graduate Programs.

The student's Plan of Work must be approved and signed by the DGPs of both departments. Also, all future correspondence (eg, request for exam permits) submitted to the Graduate School must be signed by both departments' DGPs.

Last updated January, 2003

PhD without MS option (adopted Spring 1999)

Track I. Applicants to the graduate program in the Department of Plant Pathology may request admission to a PhD program of study following completion of the Bachelor's degree.

Admissions Criteria. The Admissions Committee will consider an applicant's request for the PhD program without the MS based on outstanding credentials. Normally, the committee will look for strengths in an application that may include a combination of a high GPA, strong GRE scores, appropriate coursework as an undergraduate, a well-defined statement of interests and goals, strong letters of recommendation, and/or experience in research outside the classroom.

Course requirements. Students in the PhD without MS option will be required to take the plant pathology core courses. Advanced-level courses taken as an undergraduate at another institution may be substituted for core courses, if competence in a particular area is demonstrated on the PhD diagnostic examination. A total of 72 credit hours is required for the PhD degree.

Demonstration of Progress. Satisfactory progress in research will be assessed by the advisory committee at the end of the first and second year in residence. The advisory committee will transmit yearly to the Department Head a recommendation for continuation, termination, or change to a MS program.

Assistantship duration. Students in the PhD degree program without MS will be considered for renewal of their assistantship on an annual basis for a total term not to exceed 5 years. Benefits and time limits under the Graduate School 'Graduate Student Support Plan' will apply from the date of enrollment at N. C. State University. The intent of the option for the PhD program without the MS is to accelerate the program of study leading to the PhD degree.

Track II. A graduate student admitted to the MS program of study in the Department of Plant Pathology may, at an appropriate time, petition his/her advisory committee and the Graduate Dean to change to a PhD program without completion of the MS degree. The advisor should provide a letter of recommendation to the Department Head and Director of Graduate Programs along with a revised plan of work for the proposed PhD coursework. Course requirements and assistantship time limits under Track I will apply. Eligibility for benefits under the Graduate School 'Graduate Student Support Plan' begin with initial enrollment at N. C. State University .

Plan of Work. The Plan of Work for **Master's students** should contain approximately two-thirds of the course work in the major and one-third in supporting courses. The program of course work to be followed by the student and the thesis problem selected must be approved by the student's advisory committee, the Department Head, or the Director of Graduate Programs and the Graduate School. The Master of Science degree requires 30 credit hours. *The Plan of Work should be submitted to the Director of Graduate Programs in time to get departmental approval and be submitted to the Graduate School for approval prior to completion of one-half (1st year) of the program.*

The Plan of Work for **PhD students** should include courses selected from groups embracing one principal subject of concentration, the major, and from a cognate field, the minor. The courses in the minor may be from a single field or from an interdisciplinary field. The Ph. D. degree requires 72 credit hours. Up to 18 credit hours may be transferred from a MS degree. *The Plan of Work should be submitted to the Director of Graduate Programs in time to get departmental approval and be submitted to the Graduate School for approval as soon as feasible after completion of 12 hours of course work.*

Minor. Students may elect to minor in a discipline outside of plant pathology. If a minor is elected, one member of the advisory committee must be from the designated minor and at least one course on the plan of work must come from the discipline of the minor professor. MS students may not minor in Biotechnology. See Graduate School for other information on minors.

Statement of Progress in Degree Program. The faculty firmly believes that all students should understand the status of their research programs, and that each advisory committee is responsible for assessing this status. In order to facilitate communication and ensure that assessments of students' progress are completed in a timely manner, a written statement evaluating the progress for each student should be made by that student's advisory committee to the Department Head by the end of his/her first year in residence. A copy of the statement is in the appendix.

Students have advisory committee meetings every six months during their graduate program. the second committee meeting is intended to be a critical assessment of a student's research capability. The advisory committee's evaluation will be based on the progress and productivity of the research, the student's grasp of relevant literature, and the understanding of research concepts. Academic standing alone will not be justification for continuation, if research progress is unsatisfactory.

The advisory committee will have two options for the statement of progress to the Department Head: 1) the student is making satisfactory progress toward the degree, or 2) the student should not continue in the graduate program. If a student is meeting the minimum research requirements, but in the opinion of the advisor and committee the student is not achieving his or her potential, the conditions for improvement will be provided both orally and in writing to the student by the advisor. At that time a date also will be set (no more than six months later) when the student's progress will be reassessed

and a new statement prepared for the Department Head. Students will be given only one conditional period.

The advisor will meet with the student after consultation with the advisory committee and inform the student of his/her progress both orally and by completion of the progress form in the appendix. If the recommendation is not unanimous, a written statement should be prepared by each committee member. The recommendation by the advisory committee will be considered advisory to the Department Head for final action.

PhD Thesis Proposal. Graduate students working towards a PhD degree will present a thesis proposal to their Advisory Committee, specially invited faculty and students, and any other interested faculty and students. The thesis proposal will be presented informally to encourage positive feedback to the student on the proposed research while the research is still in the planning stages. Consideration of ideas and suggestions from an informal group of faculty and students should strengthen the thesis research.

The thesis proposal should be presented after the first Advisory Committee meeting and *before* the ninth week of the second semester in residence. The proposal should include an overall justification of the proposed research with pertinent references, a statement of objectives, and a description of experiments planned. A brief outline of the research should be available for participants to follow during the presentation. Since the thesis presentation is informal, frequent comments and suggestions from the participants should be expected. Extensive title slides are unwarranted, although preliminary results should be illustrated.

The procedure for scheduling the PhD thesis proposal should include:

Student, advisor, and Advisory Committee agree on a date for scheduling the thesis proposal presentation.

Advisor requests two to three additional faculty and at least two students to attend.

Advisor places notice of the thesis proposal presentation in the weekly announcements one week before date to invite all interested faculty and students.

Advisor files PhD Thesis Proposal Report form with Director of Graduate Programs after the presentation.

The Director of Graduate Programs will coordinate the thesis proposal presentations each semester.

Seminar

The seminar program in this Department has four major objectives:

1. to review and interpret recent developments in plant pathology for students and faculty;
2. to give students experience in written and oral presentation of subject matter;
3. to give students experience in planning, interpretation, and defense of their own research; and
4. to provide an opportunity for fellowship among students and faculty.

The seminar requirements set forth in this outline are required for the indicated degrees in this Department. *It is the responsibility of the student* and his major advisor to see that they are fulfilled.

Seminar Requirements: Since it is not possible to offer all four objectives in a single type of seminar, different seminars are currently offered: **PhD students:** participation in seminar by doctoral students is intended to strengthen skill sin organization and presentation of proposed research and results.

1. **Thesis proposal.** Usually given in second semester in residence as an informal presentation to committee and invited faculty and students. A completed Thesis Proposal form should be filed with the Director of Graduate Programs (see below for more details).
2. **Research Seminar.** A research seminar is to be given as a departmental seminar (PP 690) during the fourth semester in residency.
3. **Final Seminar.** A final seminar consisting of research accomplishments is to be scheduled preceding the thesis defense. This seminar is to be scheduled at the convenience of the advisory committee and is not part of the weekly seminar series (PP 690).
4. **Discussion Group Participation.** Participation in at least one discussion group each year is required.

M.S. and M.P.P. Students:

1. **Symposium presentation.** Given during fall semester as part of Departmental Symposium. Format is same as a 15-minute paper presentation at national meetings. Students should register for PP 690: Seminar in the semester of participation in the departmental symposium.
2. **Final Seminar.** A final seminar is to be given preceding the final examination. This seminar is to be scheduled at the convenience of the advisory committee and is not part of the weekly seminar series (PP 690).
3. **Discussion Group Participation.** Participation in at least one discussion group each year is required.

Minors in Plant Pathology: minors are encouraged to participate in a Discussion Group Series in lieu of presenting a seminar. **Joint Majors in Plant Pathology:** joint majors in Plant Pathology (M.S. and PhD) are expected to give at least one seminar in PP 690 and a final thesis research seminar. **Attendance and Participation:** attendance at the weekly seminars, except for course conflicts and travel approved by the advisor, *is a departmental requirement for all students, whether registered for seminar or not.*

Preparation of Departmental Seminars (PP 690)

1. **Length:** Presentation time will be limited to 30-40 minutes, in order to allow time for discussion after the seminar has been given.
2. **Written Abstract:** The written summary for a 30-40 minute presentation should be in the format of a research abstract. It should be brief but include selected references. The summary should be reviewed by the student's major professor or by a faculty member with expertise in the subject area. A final copy of the abstract is to be sent by email to members of the department three days before the seminar.
3. **Seminar Format: Thesis Research Seminars.** The format should follow that of an Experiment Service Project Outline.
 - Statement of Problem (i.e., question to be answered). Emphasize scientific merit rather than economic importance.
 - Previous Work and Status of Pertinent Research. A critical evaluation of pertinent literature and an analysis of the relationship between the pertinent literature and the research project.
 - Statement of Objectives and Hypotheses.
 - Approach. The experimental plan for fulfilling the objectives.
 - Results. Research findings should be presented in detail. Graphics summarizing the results should be prepared. Results should be interpreted and integrated with previous data in the literature.
 - Conclusion. Draw conclusions from research findings. State how the data support or refute the hypothesis. Relate findings to previous research.
 - Future research and summary. Research planned to complete the thesis should be described, along with a summary of the current status of the work.

The thesis research seminar should accurately reflect the student's research program for the PhD degree. Since this seminar will be presented after the completion of nearly two-thirds of the student's tenure, it will be subject to critical evaluation by the faculty and students. The seminar should be previewed by the student's advisor.

4. **Discussion:** The formal seminar presentation should stimulate an exchange of ideas on the subject being considered. For this reason, questions should be primarily related to the topic. Anyone with knowledge of a question with the

speaker cannot satisfactorily answer should volunteer the information. The seminar is designed to be an examination of the subject, not the speaker.

5. **Technical Responsibilities of the Student:** Students are expected to arrange for all visual aids to be used in presenting their seminar.
6. **Grading and Evaluation of Seminars:** Students receive a grade of "Satisfactory" or "Unsatisfactory" for participation in PP 690. Unsatisfactory grades will be given 1) if the speaker fails to make an adequate oral or written presentation; or 2) if the student does not attend seminar regularly.

Discussion Groups. (Guidelines were prepared by the graduate students).

Preamble. The department requires students to participate in discussion groups as an alternative to presenting additional seminars. The previous requirement had been three seminars for the PhD and two for the MS degree. The large number of students made it difficult to schedule all the seminars during the year. It was the opinion of the faculty that discussion groups were a useful alternative and should be totally student initiated and organized with faculty playing a less active resource and support role. In past years, there have been several successful groups that met on a regular basis.

Our peers are excellent information resources with diverse talents to contribute. We must take advantage of this concentration of like-minded knowledgeable people. We also wish to encourage more faculty participation and interaction with students in discussion groups. What better (and easier) way to be exposed to new views and keep up with current topics than these informal discussion groups? Discussion groups are ideal opportunities to enrich graduate education, as a forum to explore ideas not presented in traditional classroom situations. We may choose topics which interest us and discuss any aspect for any length of time. We hope to foster an attitude among our students where they will not be satisfied with "just getting by" but will strive for excellence.

It is our intent to provide all students the opportunity for consistently productive discussion groups. We welcome your continued comments and suggestions regarding the guidelines.

Guidelines for Discussion Groups. A Discussion Group Coordinator will be elected by the graduate student council for a one-year appointment beginning in the summer term of each year. The coordinator will oversee the overall discussion group program and will serve as liaison to the students and faculty. The coordinator will provide notice of possible discussion subject areas to all department members and solicit student group leaders. Subject areas should emphasize the specialties of members of the department. The coordinator will provide the faculty representative with a list of all discussion groups to be held in the current semester. The coordinator and faculty representative along with each discussion group leader will select faculty advisors for each subject area. Selection of faculty advisors should be approved by the Department Head. The coordinator will present problems to the Department Head if necessary, after a reasonable effort has been made to rectify the situation.

The Discussion Group Leader's responsibilities include the following:

1. provide a list of specific topics within a subject area and scheduled dates of discussion group meetings to all department members within three weeks after the first meeting.
2. arrange for presentation of background information regarding the overall subject area of the discussion group as an introduction for the participants.

3. provide a list of participants that have met the requirements for participation in a discussion group to the faculty representative, Director of Graduate Programs, and Department Head.
4. send announcements weekly via e-mail of upcoming discussion topics.

The participant's responsibilities include the following:

1. participation in at least one discussion group per academic year is required. Participation in more than one group per semester or academic year is encouraged, but will not negate the requirement for participation in subsequent years of residence.
2. attendance is required.
3. each participant is required to make at least one presentation.
 1. topic presentation: research. The presentation should be a critical review of the paper(s) being discussed and not a synopsis or reiteration of the author's conclusions. The relevancy or usefulness of the work, suggestions for improvement, etc. the specific topic must be submitted to the group leader within two weeks after the first meeting. One copy of a current paper will be provided to each group member at the discussion group meeting one week prior to topic presentation. Background information (at least one article) should be maintained in the plant pathology library. Failure to provide topic materials one week before topic presentation will result in cancellation of the discussion session. The session may be rescheduled if time permits and with group consensus, otherwise the participation requirement is not fulfilled. Additional sessions stimulated by earlier discussions or presentations by invited speakers may be added to the discussion schedule at any time.
 2. topic presentation: colloquium. Sessions that discuss philosophies of research and science, professionalism, professional society responsibilities etc. are appropriate and encouraged. In some cases it may be possible to provide appropriate chapters for reading prior to the session.
4. a successful session demands active participation by the group members. The provisions requiring materials one week in advance allows for sufficient opportunity to review the subject and prepare for discussion.
5. if a participant fails to meet the discussion group guidelines in the judgment of the discussion group leader, the faculty advisor(s), and the faculty representative, the student will not have fulfilled the discussion group requirement for that year.
6. those students with a minor in plant pathology are subject to the same requirements as members of the department.

EXAMINATIONS

Scheduling of Master's Final Oral Examination. The final oral examination may be scheduled when all other requirements, except completion of the course work for the final semester, are satisfied. A permit to schedule the final oral examination will be requested by the Director of Graduate Programs when the candidate has registered for all remaining courses on the Plan of Work.

Final Examination for Master's Degree Students. The final examination for candidates for Master's of Science or Master of Plant Pathology degrees is designed to provide: a) thorough testing of the student's general knowledge in his major and minor fields of study; and, for MS candidates, b) evaluation of ability to orally defend the master's thesis - especially its methods, results, and major conclusion.

The draft of the MS thesis presented for defense must be "complete except for such revisions as may be expected as a result of the final examination." Passing the final examination for the MS degree indicated that both the student's general knowledge and the defense of the thesis were adequate; it does not necessarily mean that the thesis itself was adequate, however. Normally, certain revisions suggested by the Committee and the final typing of the thesis are accomplished *after* the final examination. Certification fo the acceptability of the MS thesis is a joint responsibility of the Advisory Committee and the Dean of the Graduate School. Committee members indicate their approval of the scientific content and literary quality of the thesis by signing the title page. Approval by the Graduate School is indicated after the final typing is checked for certain mechanical failures by the Graduate Office. A Diploma Order Request Card must on file in the Graduate School for the semester of graduation. Candidate who fail to make the published deadline for a given semester must file a new card.

Scheduling of PhD Exams. The Graduate School will guarantee that the permission to hold preliminary and final oral examinations will be returned to the Department within the two-week period if the request to schedule is submitted two weeks in advance of the examination date by the Director of Graduate Programs and if all of the necessary documents are in order. The checklist below covers the documents that must be completed. Please note that this includes an **accurate** Plan of Work. The two-week period will begin when all the documents are in order. If a request is received without all documents in order, the staff is instructed to return the request to schedule to the department. The Director of Graduate Programs must request permission to hold examinations.

Checklist for Scheduling Preliminary and Final PhD Exams

- A signed Patent Policy Agreement form must be filed with the Graduate School.
- Must have approved committee appointed and approved Plan of Work.

- All but three courses on a student's Plan of Work must be completed prior to scheduling the preliminary oral examination.
- Required coursework must be completed or in current registration before scheduling the final oral examination.
- Grade Point Average (GPA) must be 3.000 or higher.
- Evidence that the language requirements have been met must be filed in the Graduate School.
- Doctoral residence requirements must be met prior to scheduling final oral examination.
- Evidence must be provided that departmental written exams (or propositions) have been successfully completed.
- Four calendar months must elapse between doctoral preliminary examinations and final oral examination.
- Preliminary examination report form must be filed in the Graduate School.

Contingencies for Graduate Student Oral Examinations. The Graduate School gets frequent requests for assistance from Advisory Committees when one or more official members of the Committee fail to appear for scheduled oral examinations. The following suggestions may not resolve these problems, but they should lessen their frequency and assist major advisors in making quick and appropriate decisions when they occur.

1. Ascertain that each member of Advisory Committee (including the Graduate School Representative for doctoral students) has been notified in writing of the date, time, and place of the examination.
 2. Major Advisors call each member of the Advisory Committee the day before the examination to confirm the arrangements.
 1. ***Do not under any circumstances start an examination with one or more official committee members absent.***
 2. If a member is not present at the scheduled time and place, call his/her office immediately. Should he/she not be at the office and the secretary cannot locate the member, call the home.
 3. Having tried each of the suggestions in item 4 to no avail, and having waited a minimum of 30 minutes, notify the Graduate School that the examination must be rescheduled. A minimum of 3 days should be permitted for a substitute member to prepare for the examination.
 4. If a committee member has an emergency that occurs 3-10 days prior to the examination date that will prevent him/her from participating, the Graduate Administrator may request an appropriate substitute. The request should be in writing and walked to The Graduate School. Substitutions requested more than 10 days in advance of the examination may be processed through campus mail.
-

Comprehensive Examinations (PhD Degree). A comprehensive (preliminary) examination is required to determine each student's competency for continuing toward the PhD degree. The exam may be scheduled after registration for all course work has been completed. Plans for and scheduling of the comprehensive examination are made by the Director of Graduate Programs. The preliminary examination is scheduled no earlier than the end of the second year of graduate study and not later than one semester before the final oral examination.

The comprehensive examination generally is composed of written and oral parts. Questions, written or oral, are likely to be non-specific in nature and require logic in answering. The oral portion of the comprehensive examination is scheduled after satisfactory completion of the written exam. The oral exam is conducted by the Advisory Committee and a representative of the Graduate School. Other members of the departmental faculty attending may enter into the examination but not into the final decision of performance. Unanimous approval by the Committee is required.

Evaluation of the student's performance will, of necessity, be somewhat subjective. Evaluation will be as either "Passed" or "Failed." This examination must be passed before the student is admitted to candidacy for the PhD degree. If the oral or written portions of the exam are not satisfactory, additional study and reexamination may be required, or in some cases, termination of the student's program may be imposed. Only one reexamination is permitted.

Final Examination in Defense of PhD Dissertation. All candidates for an advanced degree are required to pass a final oral examination. The dissertation should be submitted to the Advisory Committee about two weeks before the examination is scheduled. This will allow time for members of the Committee to review and evaluate the dissertation before the examination. The examination should be scheduled to allow sufficient time after the examination for the student to submit the dissertation to the Graduate Office before the specified deadline date. The student must be registered during the term in which the final oral examination is taken. A Diploma Order Request card must be on file in the Graduate School for the semester of graduation. Candidates who fail to make the published deadline for a given semester must file a new card.

The final oral examination will be scheduled by the Director of Graduate Programs request to the Graduate School after a time has been established (generally 3 hours) when all members of the examining committee can be present during the entire period. Notice of the examination should be published in the weekly announcements by the advisor at least 5-10 days in advance so that interested faculty may attend. The final examination is given primarily by the members of the Advisory Committee and the representative from the Graduate School. Other faculty members of the department may enter into the examination but not into the final decision of the performance. Decisions concerning the adequacy or inadequacy of the thesis defense are made by the Advisory Committee with a unanimous agreement required for approval.

Graduate Certification in Foreign Languages

Certification can be accomplished in French, Spanish, or German by taking and passing any one of the 401 courses (FLF 401, FLS 401, or FLG 401) or by passing the two-part (two-hour) test of The Graduate School Foreign Language Testing Program (the GSFLT) of the Educational Testing Service of Princeton, New Jersey. These exams will be administered three times a year. Contact the Foreign Language Office for specific details.

Apprenticeship Training

In Research. The Department desires that each student gain experience in the research project of his/her adviser or other faculty members in addition to thesis research. An attempt will be made to tailor this training to the student's specific needs. If at all possible, the student should actively participate in the overall program of his/her adviser.

In Teaching. Although most graduate students do not have teaching responsibilities as part of an assistantship, some teaching experience is desirable and required for all students. This experience should involve the student as much as possible in the problems and responsibilities of teaching. All candidates for the MS degree must acquire teaching experience by participation in at least one course.

Candidates for the Ph.D. degree may be asked to participate in at least two different courses. Teaching experience gained elsewhere will be evaluated by the Advisory Committee and the Graduate Studies Coordinator for consideration in waiving the teaching requirement.

In general, graduate students will be assigned to assist with courses in their general area of expertise. Teaching assignments are made by the Teaching and Graduate Studies Coordinators. Students desiring to assist in a particular course should discuss their wishes with the coordinator in advance of the course offered. Preferably students and their Advisory Committee will select the appropriate courses at the first committee meeting and notify the coordinators of selected course(s) and preferred semester(s).

In Extension. Students are encouraged to gain experience in extension programs conducted by our faculty. Experiences with extension faculty in attending grower's meetings, visiting growers, and participating in the preparation of extension materials and agent training workshops can provide meaningful orientation to the role of an extension scientist. Our extension faculty are more than willing to cooperate with students in gaining apprenticeship experience. *However, it is the student's responsibility to let the extension faculty member know of his/her desire for apprenticeship experience.*

NUSBAUM SCHOLAR AWARD - Plant Pathology Department - N. C. State University*

The Nusbaum Scholar Award is given annually to an outstanding, recent graduate student in the Department of Plant Pathology in recognition of his/her scientific productivity and leadership in research. This award is made possible by a generous gift to the Department of Plant Pathology by the late Dr. and Mrs. Charles J. Nusbaum.

CRITERIA FOR ELIGIBILITY AND SELECTION.

1. Students will be eligible for consideration during the calendar year following successful completion of the final oral exam for the Ph.D. degree. No student will be considered more than once for the award. No more than one student will be selected in a given year.
2. Candidates will be evaluated primarily on accomplishments in their Ph.D. research.
3. Evaluations will be based on evidence of competence in research as reflected in the following:
 - a. Ph.D. thesis.
 - b. Reprints of published papers, manuscripts in press, and drafts of papers in preparation.
 - c. Final seminar on Ph.D. research as well as other seminars given at North Carolina State University.
 - d. Presentations at scientific meetings.
 1. Eligible candidates will be evaluated according to the following aspects of their research, as documented in items listed under #3 above and in nomination letter as written by the Advisory Committee chair or co-chair(s):
 - a. Originality or creativity in formulating and testing hypotheses.
 - b. Profundity in synthesis of relevant information and interpretation of results.
 - c. Productivity: amount of research accomplished in relation to its difficulty.
 - d. Clarity and conciseness in written and oral presentation of research.
 - e. Mastery of techniques and skills needed in the research.
 - f. Initiative and ability to work cooperatively.

PROCEDURES*:

1. The Honors and Awards Committee for Graduate Students will serve as the Selection Committee for the Nusbaum Scholar. The committee will be composed of seven members of the Department of Plant Pathology, representing diverse areas of research in Plant Pathology. They are appointed by the Head of the department to serve for terms of three years. Terms of individual members will be staggered for continuity within the Committee.
2. In early January of each year, the advisory committee chair for each former student who has completed his/her final oral exam for the Ph.D. degree during the previous calendar year will provide the Honors and Awards Committee with the student's thesis and reprints or manuscripts of additional research papers written by the student during his/her Ph.D. program. Abstracts of papers presented and outlines of seminars should be included. Five copies of reprints and manuscripts should be submitted to the Honors and Awards Committee for Graduate Students before January 15th. In addition, the former student's adviser(s) should provide a *nomination letter* in which the eligibility and selection criteria listed under #3 and 4 (previous page) are addressed.
3. Prior to the selection of the Nusbaum Scholar, members of the Honors and Awards Committee may individually or collectively consult with members of the students' advisory committees to obtain additional background information.
4. Members of the Honors and Awards Committee will independently evaluate the eligible Ph.D. graduates according to categories 4a-4f in the criteria for eligibility and selection. The Committee will then meet and arrive at a consensus in selecting the Nusbaum Scholar. In the absence of candidates with suitable qualifications, no award will be given.
5. The award will consist of a plaque and a check and will be presented at the biennial Nusbaum Symposium *or* Nusbaum Seminar (in alternate years) in the Spring. The monetary award has been \$1,000 in the past, but this may be increased or decreased, as determined by the Honors and Awards Committee and the Department Head. Funds will be provided for travel for the awardee to North Carolina State University to receive the award (unless the graduate has left the United States, in which case the check and plaque will be mailed to him/her). A permanent plaque with names of awardees will be displayed in a prominent place in the Department of Plant Pathology.
6. The Plant Pathology nominee for the **K. R. Keller Award in the College of Agriculture and Life Sciences** will be determined at the same time the Nusbaum Scholar is selected. Since the K. R. Keller Award is based entirely on the Ph.D. degree Thesis, criteria for this selection should include items 3-a, 3-b and 4-a through 4-e of the criteria for selecting the Nusbaum Scholar. In most years, the Nusbaum Scholar also becomes the Departmental nominee for the K. R. Keller Award, but the Honors and Awards Committee may consider each Award separately. (The **Deadline for nominations for the K. R. Keller Award** is usually around mid-February).

(Revised - May 5, 1997)

*Includes guidelines on the selection of the Plant Pathology nominee for the K. R. Keller Award (See Procedures--Item #6).

Departmental Services and Facilities

Secretarial & Photocopying. Departmental secretarial service is available to the faculty. Any student needs should be arranged through your advisor. Copy cards for student use, research and teaching are available. Office supplies may be available through your advisor.

Telephones and Fax. Phones and fax are for business use. Do not place long distance calls or faxes for personal business.

Statistical Consultation Service. The Statistical Consultation Service is a "free" service supplied by North Carolina Agricultural Experiment Station through the Department of Statistics. Services include: 1) assistance in designing experiments from a statistical viewpoint; 2) choice of appropriate programs; 3) limited programming assistance.

Computer Services. Students will be assigned "free" e-mail accounts at registration. Access to e-mail, the departmental server, the Internet, and the campus computing network can be made through the various PC's and workstations located in the graduate student offices, teaching labs, and research labs.

Campus and US Mail Service. Each student will be assigned a departmental mailbox. Daily campus and US mail service is provided.

Audio/Visual Aids. The department maintains a variety of visual aid equipment which is available on a check-out basis from 1418B Gardner. All equipment is available when not in use for classes. See the Teaching Coordinator to check-out visual aid equipment.

Laboratories and Specialized Facilities

The departmental facilities have evolved to provide space for teaching, general and specialized research, photography, etc. The space allotted to these functions is equipped with supplies, apparatus, and/or equipment to expedite the efficient use of the space for its assigned purpose. To manage these diverse facilities various faculty or staff members have been asked to oversee the use of the space and facilities therein. They are responsible for seeing that the facilities are properly used and maintained, and act as referees, if necessary, on the utilization of the assigned space.

You will be issued a key to all laboratory area that you may use. Be sure to turn off all lights and lock doors whenever you are the last to leave the room. If you are working alone at night, make certain you lock the doors to the laboratory if you leave for any length of time. If you are the last to leave the floor at night, be sure that all doors to the area are locked including teaching and preparation labs, library and other general work areas.

It is departmental policy that students, technicians and faculty who are not familiar with special equipment should obtain permission to use these facilities from the responsible persons. Rooms 2605, 2620 and 1515 Gardner are restrictively keyed. Students may obtain keys on a temporary check-out basis when cleared by the project leader in charge of the rooms, respectively.

Greenhouse Facilities. Greenhouse space must be arranged through your advisor. Recycled soil and soil that has been treated with aerated steam, clean pots, and other greenhouse supplies are available for your work. However, students are expected to do their own potting and planting into their own pots and flats and clean up the benches they use for thesis research. Any other special materials or supplies required for greenhouse research should be obtained through your advisor. Greenhouse space is assigned annually to faculty members by the Greenhouse Committee. A policy on greenhouse use can be obtained from your advisor.

Departmental Library. The Departmental Library (2406 Gardner) contains catalogued reference volumes on all aspects of plant pathology and may related areas. A card catalog is maintained in cooperation with D. H. Hill Library. Charge Card files for reference material and for theses are located in this room and are to be used when removing texts and theses for short periods (for making copies, etc. only). Library materials are for use only in the library and should not be removed for an extended time. This room is frequently reserved for committee meetings, and by students preparing for seminars, etc. It also serves as a break room.

Photography Laboratory Guidelines. The Plant Pathology departmental photography facility attempts to provide a broad range of services and equipment needed by both faculty and students in research, teaching, and extension. This facility is located in 1305 Gardner Hall and is under direct supervision of the departmental photographer. The overall policies are set by the departmental Photo/Computer committee appointed each year by the department head.

Each student, technician, and faculty member is encouraged to become familiar with the services and equipment available through the photography facility. Use of the equipment and facilities is on a first-come basis, and must be coordinated through the departmental photographer. Certain pieces of equipment can only be used after you have been properly instructed in its use. You are expected to leave the work area and equipment in a clean and orderly fashion.

The photography laboratory and darkroom can be used 24 hours a day, seven days a week. To avoid scheduling conflicts and to be sure all supplies are available, make

arrangements in advance with the departmental photographer. Some of the equipment cannot be made available to an inexperienced operator.

Work with graduate students will be limited to project work for their major professors and to advising photographic techniques and drawings related to thesis preparation. The facility is available for preparation of thesis material, but the photographer should be consulted relative to supplies that can be made available.

Black and white negatives and one contact print will be returned to the requester. To save time, the contact print will not necessarily be of sufficient quality for publication. High quality prints can be made later if desirable.

Film and mailers for official use in departmental programs are available on a sign-out basis.

Travel to Professional Meetings

Information and Procedures. The following procedures and information apply to travel to any professional meeting- in, or out-of-state.

Travel Request. Travel authorization form must be submitted well in advance of the meetings. The sooner the better. Travel authorization forms may be obtained in the bookkeeping office. In filling out these forms, note the following items:

1. Purpose: Be as specific as possible and spell out society or organization name; e.g., "Participation in national meetings of the Society of Nematologists and present a research paper; participate in the national meeting of the American Phytopathological Society, moderate a paper session, and present a research paper."
2. Indicate account number against which the trip is to be charged. Students get this number from your advisor.

Conference Registration. Direct payment from the department to the organization sponsoring the meetings can be made after the request for travel has been approved. The person requesting travel authorization will be notified of approval as soon as the department is notified. A copy of the fee schedule (brochure) itemizing the cost is required. If registration is to be claimed as travel reimbursement, **an original paid receipt** must accompany the reimbursement form.

Dates of Travel. Dates are limited to the number of days allowed for air travel. Annual leave in conjunction with the trip will need to be noted on the authorization form.

Super Saver. Employees traveling to the meetings earlier than necessary and/or delaying their return to avail the state of reduced transportation rates may be reimbursed subsistence for additional travel days if the amount saved in transportation costs due to early and/or delayed travel is greater than the amount expended in salary and additional subsistence. Dates of departure and return are to allow for the Super Saver service.

Excess Lodging. This is allowed if requested on the Travel Authorization form. Meals covered by the registration fee cannot be claimed as subsistence.

Travel Advance. An advance can be obtained. This should be applied for on the travel authorization form and may not exceed estimated cost of the trip. A check will be issued to the traveler no more than five working days prior to the trip. The traveler may have the check mailed to him/her, or picked up at the University Accounting Office, 213 Administrative Services Center. Super Saver tickets can be paid in time to pay for the ticket if the date and amount are indicated. Don't forget to sign for an advance. If travel is by state car, no transportation costs are allowed.

Registration fees, in whole or in part, may be allowed (see Conference Registration).

Travel Reimbursement. The following *original* receipts are required to be submitted with the travel form:

1. airline ticket
2. rental car
3. bus or limo to and from airport
4. registration (if not paid directly to the society)
5. lodging

All receipts must be in the name of the person requesting the reimbursement. If a room is shared, each person must have an original receipt in his/her name. Please submit travel reimbursement forms as soon as possible after returning from meetings.

UGSA Travel Fund Guidelines

Purpose. The UGSA seeks to aid graduate students in their professional activities. The purpose of the Travel Fund is to subsidize, not reimburse, students for their participation at professional meetings.

1. Eligibility

A. Eligibility for funding is based on participation at a professional meeting.

Participation is defined as:

1. presentation of a paper by the applicant
2. Discussant on a panel or round table discussion
3. Workshop director or moderator
4. Presentation of original work, such as art, design, or a poster presentation

NOTE: There are many conferences which students are invited to attend due to their classroom or research achievements. Despite this honor, the Travel Fund is limited and must, therefore, restrict funding to only those who meet the above definition of participation.

B. The UGSA is authorized to make only one allocation per degree program at NCSU, i.e. once per Masters program and/or once per Doctoral program.

Procedures

1. Travel Fund applications and expenditure vouchers are available from your departmental graduate secretary, your departmental graduate administrator, your departmental GSA representative or the UGSA homepage which is located within the NCSU Graduate School homepage. (http://www2.ncsu.edu/ncsu/stud_orgs/gsa/gsa2.html)
2. The Travel Fund application must be received by the Travel fund Administrator **BEFORE THE DATE OF THE MEETING.**
3. In addition to this application, one of the following **MUST** be submitted:
 - a. An abstract as it appears in the meeting/conference bulletin
 - b. A letter from the conference committee verifying your participation in the conference.

The applicant will be notified via letter upon receipt of the application by the Travel Fund Administrator.

1. The student must submit a GSA expenditure voucher and legible photocopies of all receipts to the Travel Fund Administrator within two weeks of his/her return to NCSU. **FAILURE TO DO SO WILL RESULT IN THE FORFEITURE OF ANY REIMBURSEMENT FROM THE GSA.** Due to various changes in bookkeeping regulations, photocopies of receipts must be legible to be acceptable for submission. In addition, please separate receipts before photocopying them. Copies of receipts which overlay each other are not acceptable. The applicant will be notified upon receipt and satisfactory completion of the expenditure voucher by the Travel Fund Administrator. **INCOMPLETE VOUCHERS WILL BE RETURNED TO THE APPLICANT FOR COMPLETION.**

III. Funding

- A.** No travel advances will be granted.
- B.** The GSA Travel Fund will subsidize the attended days of the meeting only.
- C.** The amount of reimbursement cannot be determined until the submission of the expenditure voucher and receipts. Please use the funding standards below if you require an estimate of your reimbursement.
- D.** Funding will be calculated using the following schedule:

Transportation. 25% of any transportation expenses not involving a personal vehicle. This includes: 1) airplane, train, or bus fare 2) taxi, subway, or shuttle fare 3) tolls 4) rental car fees, and 5) gasoline expenditures if a rental care is used. If a personal vehicle is used, mileage will be reimbursed at a rate of \$.25/mile for a trip of 60 miles or less and \$.20/mile for a trip of more than 60 miles.

Lodging. the daily cost, not to exceed \$20/day

Registration Fee. 50% of meeting/conference registration fee

The total reimbursement WILL NOT exceed \$150.00

Note: Food and entertainment are not reimbursable. Please do not submit receipts or report any money received for food and entertainment.

1. Funding will be distributed on a semester basis, with the two Summer sessions considered as one semester. In order to receive reimbursement for a particular semester, the conference must take place prior to the last day of final exams during that semester. Reimbursement checks will be sent out at or near the end of each semester. *You may therefore expect a 30-60 day wait after the semester has ended before you receive a check from the GSA.* Those people who do not return from a conference before final exams should expect some delay in the receipt of their checks.
2. Falsification of applications or receipts will result in denial of current or future subsidy while at NCSU.

IV. Additional Funding

The Travel Fund Administrator strongly encourages applicants to seek additional funding from outside sources. Places to seek funding include your department head, a grant held by your major professor, or the on-line graduate fellowship and scholarship file located on the University's Mosaic system. The use of departmental automobiles should also be investigated. If additional funding is secured, this must be reported on the expenditure voucher. **DO NOT** subtract this additional funding from your total expenditure.

If you have any questions about the above guidelines please contact the Travel Fund Administrator at the following address:

Graduate Student Association Travel Fund Administrator
c/o NCSU Libraries
Box 7111
Raleigh, NC 27695-7111
515 - 3303

Use of State-Owned Vehicles for Research or Other Official Business

1. Eligibility requirements:
 1. Possess a North Carolina operator's license.
 2. **Receive payroll check signed by University business manager.**
 3. Travel with permission of advisor or supervisor.
 4. Use common sense, good judgment, and treat the vehicle with care.
 5. Graduate assistants who have either teaching or research obligations and who are on the University payroll performing assigned duties are covered by Workmen's Compensation and by State Torts Claim Act for insurance purposes.
 6. Graduate students who are on fellowships or scholarships with funds administered by agencies other than the University are not eligible for Workmen's Compensation. They are covered under Torts Claim if they are performing missions and duties assigned by faculty or staff members. Therefore, in selecting drivers for scientific meetings or other trips, **only those students who clearly have service responsibilities to the University and receive a payroll check signed by the University business manager will be designated as drivers. Fellowship holders may not operate state vehicles.**
2. Procedure for Use
 1. Reserve vehicle in advance through reservation book outside Main Office.
 2. Upon return park vehicle in proper area, place key on bard immediately and complete travel record form and turn in gas purchase receipts.
3. Policy
 1. Purchase fuel, when practical, from the campus motor pool and other state agencies (listed in glove compartment).
 2. Vehicles are available for **official use only.**
 3. Passengers must be associated officially with the purpose of the trip.
 4. Spouses may accompany the operator only with **prior approval of the Director** of the North Carolina Research Service.
 5. **Prior approval from the Department Head is required to park the vehicle at residence overnight is required.**
 6. Use trucks rather than passenger vehicles (state cars) for hauling pesticides, equipment, soils, etc. **Do not transport pesticides or other hazardous materials in passenger vehicles.**
 7. Operators will conform to posted speed limits and are responsible for violation citations.
 8. In case of mechanical difficulty, use credit cards for minor repairs or tire replacement. In the even of more serious trouble, call the nearest authorized dealer (this service also can be requested through the State Highway Patrol).
 9. Liability insurance is carried on each vehicle; collision is not.
 10. Any use of private vehicle must be with prior approval of the department head.

-
1. **Insurance.** Failure to comply with policy stated herein could result in loss of insurance protection in case of accident.
 2. Insurance provisions provided by the Attorney General's staff affect travel in state vehicles:
 3. Individual employees who drive State cars should be advised of the desirability of securing "other vehicle" coverage on their own insurance policy to increase the state coverage. Cost is quite reasonable.