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**Department of Plant Science**

**Supplementary Regulations and Guidelines**

**for Candidacy Examinations**

Approved by the Plant Science Department Council, May 17, 1994

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 December 16, 2003; September 3, 2013

The regulations and guidelines contained in this booklet supplement or reinforce those found in the *University of Manitoba Graduate Calendar* and in the Faculty of Graduate Studies *Academic Guide*.

**CANDIDACY EXAMINATION**

**Rationale**

The Ph.D. degree is the highest degree awarded by the University of Manitoba. This degree is granted on the basis of academic achievement, independent research and scholarship, and demonstration of proficiency in the chosen field of study. Students registered in a Ph.D. program do not become candidates for the Ph.D. degree until they have successfully completed a candidacy examination. The purpose of the candidacy examination is to determine whether a student is capable of meeting the expected levels of proficiency for a Ph.D. degree and whether the student is worthy of receiving the University's highest academic degree. The student must demonstrate: 1) Ability in independent research and/or scholarship; 2) Broad general knowledge; 3) Ability to integrate knowledge; and 4) Ability to synthesize and communicate ideas and thoughts.

**The Candidacy Examination**

The candidacy examination should assess the student's competence and potential as an independent scientist in the chosen field of study. Therefore, the examination should be designed to assess the student's:

1. Research potential. Some indications of a student's research potential are the ability to: 1) assess and solve problems; 2) interpret and evaluate research results; 3) think critically; and 4) determine future research directions given a particular situation.

2. General knowledge. General knowledge of biological science and plant science in particular. Also, students should be aware of what is happening around them. They should be familiar with research being conducted around them, and be aware of current issues in science both locally and globally.

3. Ability to integrate knowledge and synthesize information. Ability to take knowledge learned from a number of sources and integrate this knowledge into a problem solving situation.

4. Ability to communicate clearly and concisely ideas and thoughts - both oral and written communication.

 **BASIC PHILOSOPHY OF THE CANDIDACY EXAMINATION**

The candidacy examination **is** intended to assess the student's overall potential as a Ph.D. candidate and determine whether he/she has acquired the skills expected of a person receiving the highest academic degree. The candidacy examination is **not** intended to be a comprehensive examination of previous courses.

The following skills are required:

* Effective oral communication. The student should be able to answer questions in an organized and coherent manner.
* Effective written communication. The student should be able to answer questions in a logical and organized manner that is clear, concise and grammatically correct.
* Assess and solve problems. The student should be able to recognize the essential features of a problem and be able to provide potential solutions to the problem. In so doing, the student should provide the reasoning used to solve the problem, state the assumptions that were made in order to assess the problem and, where applicable, demonstrate integration of knowledge from a number of areas.
* Awareness of current research activities. The student should be familiar with ongoing research in the department and in other laboratories where work related to the student's thesis is being conducted.
* General knowledge. The student should have a general knowledge of biological sciences and plant science in particular.

**EXAMINING COMMITTEE**

The examining committee will consist of the student's advisory committee and a chairperson normally chosen from the Plant Science Graduate Studies Committee by the chairperson of the Graduate Studies Committee. The chairperson of the examining committee should not be a standing member of the student's advisory committee.

**The role of the chairperson would be as follows:**

* To coordinate the examination process.
* To chair the oral portion of the examination and invigilate the written portion of the examination.
* To receive questions from the examining committee prior to the examination date and evaluate the questions relative to the objectives of the candidacy examination. The chairperson will have the ability to ask examiners to modify their questions to fulfil the goals of the candidacy examination. The chairperson may wish to meet with the examining committee prior to the examination to outline the requirements of the examination process and coordinate areas of questioning for the written examination.
* To serve as a facilitator in the evaluation of the student's performance. The chairperson will not be required to make his/her own evaluation but will be responsible for compilation of the evaluation results and communication of the results to the student and the Faculty of Graduate Studies.

**The role of the examining committee is as follows:**

* To formulate questions that will assess the student's capabilities relative to the goals of the candidacy examination and submit the questions to the chairperson within the time frame requested by the chairperson.
* To evaluate the student's performance relative to the goals of the candidacy examination.
* To facilitate the student's preparation for the candidacy examination. This should include guidance relative to expectations and a willingness to spend time with the student discussing principles, concepts, ideas, etc.

**THE STUDENT**

**The student should do the following:**

* Through the advisory committee, inform the plant science graduate studies committee of his/her intent to sit for the candidacy examination a minimum of three months prior to the expected examination date and preferably no later than 18 months after the start of the program. Candidacy examinations should be held no later than 24 months after the commencement of a student's Ph.D. program. Regulations of the Faculty of Graduate Studies also stipulate that the student must take the examination no later than 1 year prior to expected graduation.
* Ask members of the examining committee for guidance and assistance in preparation for the examination.
* Prepare for the examination. Note that preparation for this examination should begin at the beginning of the Ph.D. program and should **not** be considered a three month cramming session. The process should be the gradual development of the student as a scientist which involves the increasing ability to assess and evaluate information and apply it to his/her area of research.

**THE CANDIDACY EXAMINATION**

The candidacy examination will consist of two parts: a written examination and an oral examination. The written part will be written prior to the oral part. The oral part should take place within seven days, and not later than two weeks, after completion of the written part. The two parts are as follows:

**Written Examination**: The student will sit for this examination over two consecutive working days for a maximum of four hours per day. The examination will cover areas related to the student's research discipline. Each examiner will provide questions to the examination chairperson in advance to allow for any modifications. The questions should be designed to evaluate the student’s abilities relative to the objectives of the candidacy examination.

**Oral Examination**: This examination will normally last 1-2 hours but under no circumstances exceed 3 hours. Questions should be of a general nature. The main goal of the oral examination is to assess the general knowledge of the student, his/her oral communication skills, and ability to think through a problem quickly and answer in a coherent manner. The focus of the examination questions should be general knowledge. For example, a student may not be expected to know how to partition variances in order to determine the effect of environment on the expression of a plant height, but would be expected to know that environmental factors may influence the expression of plant height and should be able to use this information in explaining why plants of the same genotype may be taller at the bottom of a hill than they are on top of a hill.

**Decision of Examiners**

The student must pass both parts of the candidacy examination in order to pass the examination. A student will proceed to the oral examination even if the written examination is failed. After completion of both parts of the examination, a failure in either the written examination or the oral examination will be reported as a failed attempt. A student has a maximum of two attempts. The second attempt must occur within four months from date of notification of the decision on the first attempt.

A favourable decision must be unanimous. Anything less than unanimity will be considered a failure. The committee chair should communicate the result of the examination to the student within one week of completion of both parts of the examination and should provide to the student an assessment of his/her performance, based on the comments from the committee, regardless of whether the student passed or failed the examination. This will make the student aware of any weaknesses. Examiners will not report results of the written examination to the student prior to completion of the oral examination. The assessment of the student's performance in the candidacy examination should be written to the student and copied to the examination committee members and to the Head, Department of Plant Science.

All examination papers are returned to the committee chair. Papers that have been passed can be returned to the student. Original copies of failed papers will be kept on file in case of appeal, however, photocopies can be returned to the student.

 **GUIDELINES TO EXAMINERS**

* Review the rationale and objectives of the candidacy examination prior to formulation of your questions. If you have questions regarding the procedure and objectives, discuss this with the person assigned to chair the candidacy examination.
* Prepare your questions well in advance of the date set for the examination and submit them to the chairperson. Be prepared to modify your questions if requested.
* Formulate your questions in such a way that will allow you to evaluate the student's answer not only on the basis of a correct response but also on the basis of communication skills, overall thinking process, interpretation, integration, synthesis, etc.
* Make your final assessment and evaluation according to the objectives of the candidacy examination.

 **GUIDELINES TO STUDENTS**

* Review the rationale and objectives of the candidacy examination when you begin your Ph.D. program.
* Begin preparation for the candidacy examination when you begin your Ph.D. program. Do not count on a final cramming session to get you through.
* Keep up with your reading, talk to people working around you, be aware of issues related to plant science, etc. (i.e. Don't stay in your own world, explore other areas and be aware).
* Take opportunities to discuss science and research with your colleagues.
* Talk to your advisory committee members several times prior to your examination.
* Don't be afraid to ask questions and don't be afraid to look for answers.
* Demonstrate other skills besides knowledge in answering questions. Provide your reasoning, the assumptions you have made, etc. You will be evaluated on your ability for higher levels of thinking, eg. interpretation, analysis, integration, synthesis etc. Show your examiners that you can do this.

 **SAMPLE EVALUATION QUESTIONNAIRE**

Has the student

1. effectively communicated the answers to the questions?

2. shown an ability to assess and solve problems?

3. demonstrated an ability to think critically?

4. demonstrated a good general knowledge in areas outside the area of specialization?

5. demonstrated specific knowledge in the area of specialization suitable to a Ph.D. candidate in the process of completing a research project?

6. demonstrated an ability to reason through a problem even when some of the assumptions made were incorrect?

7. shown the ability to integrate knowledge from other areas and apply this to a particular problem?

8. demonstrated independence of thought and ability to synthesize new ideas?