

Purpose of the Oral Comprehensive Examination

The purpose of the oral comprehensive exam is to determine whether a PhD student can continue as a PhD candidate or whether an MSc student can fast-track to become a PhD candidate in Experimental Medicine (ExMed). This will be based on the ability of the student to successfully complete several research-related objectives during the oral comprehensive exam. To obtain a passing mark for the oral comprehensive exam the student is expected to demonstrate the following:

1. In writing, they have the ability to critically evaluate a research article (from their broad field of research) and to summarize the main findings of their research project in a well-written and concise format.
2. Orally, they have the ability to present scientific information in a professional manner, including a well-defined hypothesis and objectives, providing sufficient background information to place the findings in the appropriate context
3. They have the ability to critically evaluate their own and other data and to support their ideas and conclusions
4. They have the ability to answer general knowledge questions pertaining to their field of research
5. They have the ability to discuss their research findings in the context of the larger field in which the project belongs

OVERALL SUMMARY

The oral comprehensive exam has been designed to accomplish several goals:

1. to evaluate student's knowledge beyond that of their research project
2. to evaluate the student through both written and oral components
3. to evaluate all students in ExMed similarly

The oral comprehensive exam is a mix of a critical evaluation of a research article in combination with questions related directly and more broadly to the research project of the student.

The oral comprehensive exam replaces the annual thesis committee meeting and is comprised of the same members, with an additional committee member from outside the Department of Medicine.

Students are evaluated on the written components, the oral components, as well as their ability to answer questions. The combination of these will determine the outcome for the oral comprehensive exam.

The length of the oral comprehensive exam should generally be no longer than 3 hours, but no shorter than 2.5 hours.

Journal Article Section (60 minutes)

Written summary	10%
Presentation	10%
Response to Questions	20%
SUBTOTAL	40%

Thesis Project Section (90 minutes)

Written summary	10%
Presentation	10%
Broad understanding questions	20%
Project-related questions	20%
SUBTOTAL	60%

*In this way, students will be evaluated on their **writing skills** (20%); their **presentation skills** (20%); and their ability to demonstrate **critical thinking** and a sufficient level of **knowledge broadly related to their project** (60%) in order to continue as a PhD candidate in ExMed.*

Three outcomes are possible: PASS, CONDITIONAL PASS, or FAIL

For those admitted as PhD students, in the case of a Pass, the student continues in the doctoral program. In the case of a Fail, where the student fails the majority of the components, the student has the option to repeat the oral comprehensive exam no earlier than four and no later than six months. A Conditional Pass is given if a student passes some components but not others of the oral comprehensive exam. In either case, an "HH" will be entered on their transcript. In the case of a conditional pass, only the failed components need to be repeated - no earlier than four and no later than six months. If a student fails the oral comprehensive exam a 2nd time, they will receive an F on their transcript and be asked to withdraw from the program.

NOTE: For MSc students wishing to fast-track, only those that PASS the oral comprehensive exam will be allowed to fast-track to become PhD candidates. If they do not pass, they will complete their MSc degree. They have the option to re-apply to enter as a PhD student, after final submission of the MSc thesis.

DETAILED INFORMATION

NOTE: *Appendix 3* includes responsibilities and timelines of Division, academic advisor (AA), supervisor, and student.

12 Months Prior to the Oral Comprehensive Exam

At the meeting prior to the oral comprehensive exam, the AA will ask each committee member to give the student topics/questions/keywords that they will be expected to know at the oral comprehensive exam. If the external member is not present at this meeting, at the time they are identified, they are asked by the AA to send the same.

Scheduling the Oral Comprehensive Exam

Students are responsible for scheduling their oral comprehensive exam. For PhD students, this exam is normally held in the fourth semester of the PhD, i.e., in the second year, except in cases where there has been a change of supervisor or a major change in the research topic. For MSc students who want to fast-track, this exam should be held in semester 3 or 4 of their MSc degree, but cannot be held after the completion of 4 semesters. MSc students who wish to fast-track to PhD must plan well in advance, which includes notifying the ExMed Division well in advance, in order to ensure sufficient time to complete all requirements/documents for the oral comprehensive exam.

ExMed contacts the student and supervisor **4 months** prior to their assigned month, to prompt them to schedule their oral comprehensive exam. Students are responsible to contact their committee members and book a room and to confirm date, time and location with all committee members and ExMed.

Documents to be Completed by the Student (see timelines in Appendix 3)

Page 1 of the Graduate Student Research Progress Tracking Form:

- 1st Section (Objectives): The student, in collaboration with their supervisor, must define the objectives and timelines for the upcoming year (additional pages may be added). These objectives and timelines will serve to evaluate the student's overall performance at the next meeting.

- 2nd Section (Progress): The student, in collaboration with their supervisor, must report their progress over the previous year (additional pages may be added). This progress report must specifically address the progress made toward the objectives set at the previous meeting. This section should be quite detailed to give a global overview of the work thus far accomplished. Progress outside the scope of the objectives, i.e., class work, conferences attended, studentships obtained, etc. should also be included.

Research Article Critique (see details in *Appendix 1*):

A research article critique in a field related to that of the student should be written and submitted by the student to the committee two weeks before the oral comprehensive exam. Committee members will each provide one research article to chairing AA **2 months** prior to the oral comprehensive exam. The AA will select one article to send to the student **four weeks** prior to the oral comprehensive exam. The student will write a research article critique and will submit it to committee members **two weeks** prior to the oral comprehensive exam. Delays are not acceptable and will be taken into account in the evaluation. The student is expected to briefly summarize the article, critically evaluate the data and conclusions of the authors, and to present a plan for moving the project forward and to address questions that arise from data presented in the paper. This critique should be no more than 5 single-spaced pages and should be written by the student **without help** from the supervisor.

Research Project Summary (previously referred to as the extended abstract):

A summary of the research project should be submitted to the committee **one week** prior to the oral comprehensive exam. This summary should be written by the student, formatted as a manuscript, and include the following sections: Introduction (including a rationale and hypothesis), methods, results, and discussion. The student should include information on experimental challenges encountered. Following the discussion section, the student should include future directions of the project to demonstrate how their research accomplished to date can be integrated into a doctoral thesis. The project summary should be no longer than 8 single-spaced pages and should be written by the student **with help** from the supervisor. Figures optional.

Letter provided by Supervisor

A confidential letter from the supervisor assessing the student's performance should be sent to the committee members and the ExMed Division **one week** PRIOR to the oral comprehensive exam. The letter should include comments on intellectual ability, laboratory skills, demonstration of independence in the conduct of research, diligence and hard work in the performance of experiments.

Composition of the Committee & Role of Supervisor(s)

The oral comprehensive exam committee differs from the ongoing thesis committee in having one additional member, who **MUST** be from outside the Department of Medicine of McGill University to ensure impartial assessment of the student's performance. The oral comprehensive exam is chaired by the AA, who ensures all guidelines are followed and who also writes up the minutes of the meeting.

NOTE: The supervisor(s) of the student is/are present during the oral comprehensive exam but considered non-voting member(s). Supervisor does *not* ask questions but is allowed to clarify specific issues if asked by the AA or other committee members. At the conclusion of the meeting, when the outcome is discussed, *both* the supervisor(s) and student are not present. Both the supervisor(s) and the student must be present for the decision of the committee.

General Procedure of the Oral Comprehensive Exam

The oral comprehensive exam is comprised of 5 discrete sections:

1. The supervisor(s) provides information to committee on student background, academic performance, and current performance in their research lab. The student is not present.
2. Student presentation & critique of research article followed by questions. The duration of this section is no longer than 60 minutes.
3. Student presentation of their research project followed by two rounds of questions from committee members – both project related and general knowledge. The duration of this section should be no longer than 90 minutes.
4. A follow-up private meeting in which both the student and supervisor(s) leave the room. Committee members provide AA with their marks for different sections of the oral comprehensive exam using the grids in **Appendix 2**. AA compiles marks, and discusses with committee members, to arrive at a consensus for whether the student receives a Pass, a Fail, or a Conditional Pass. AA provides comments explaining overall ratings of committee using Form 2 of the GPS research tracking form.
5. The student and supervisor(s) are invited back in, and the AA explains the outcome of the meeting.

Student Presentations and Question Periods

The first presentation (approximately 25 minutes) is an oral critique of the research article. The student should summarize - in point form - the rationale of the study and present the most important data from the paper as well as the conclusions of the authors. The student should present a plan for follow up experiments/studies that can be done to move the project forward and to address questions that arise from data presented in the paper. The student should be prepared to explain the methodology used as well as to discuss the statistical analyses and whether it is appropriate or not. This is followed by a question period and discussion of the paper, to ensure that the student understands the findings and can critically evaluate the data and conclusions of the authors.

The second presentation (approximately 25 minutes) is a summary of the PhD project of the student. This should include an introduction placing the PhD proposal in the context of field as well as methods, results and conclusions. The student is expected to present a clear hypothesis and objectives. This is followed by two rounds of questions. In the first round, committee members ask questions that are related to the project and in the second round, committee members ask general knowledge questions.

Student Evaluation (see Appendix 2)

Committee members scoring the student include the two regular members as well as the external member, but not the supervisor/co-supervisor or AA. Potential outcomes include:

PASS: The student meets or exceeds expectations *in each area* from the three voting committee members. If there is a discrepancy in scoring that affects the outcome, the AA discusses with committee members in order to reach a consensus.

CONDITIONAL PASS: (This is only for students admitted as PhD students.) The student meets or exceeds expectations in *most* areas but fails to do so in a minority of others. In this case, only the failed components – clearly defined in the minutes of the oral comprehensive exam - need to be repeated, no earlier than four and no later than six months. If student fails a 2nd attempt, they receive an F and will be asked to withdraw from the program. **NOTE:** MSc students must PASS the oral comprehensive exam in order to formally fast-track to the PhD. If they do not meet or exceed expectations in each area, they are *not eligible* to receive a CONDITIONAL PASS. Instead, they complete their MSc degree.

FAIL: The student fails to meet expectations in the majority of areas. PhD students have the option to repeat the oral comprehensive exam no earlier than four and no later than six months. If the student fails a 2nd attempt, they receive an F on their transcript and will be asked to withdraw from the program.



Appendices

APPENDIX 1: Journal Article Critique

Committee members will each provide one research article to chairing AA **2 months** prior to the oral comprehensive exam. The AA will select one article to send to the student **four weeks** prior to the oral comprehensive exam. The student will write a research article critique and will submit it to committee members **two weeks** prior to the oral comprehensive exam. Delays are not acceptable and will be taken into account in the evaluation. The student is expected to briefly summarize the article, critically evaluate the data and conclusions of the authors, and to present a plan for moving the project forward and to address questions that arise from data presented in the paper. This critique should be no more than 5 single-spaced pages and should be written by the student *without* help from the supervisor.

The following sections should be included in the research article critique:

1. Brief summary of article - What is rationale for the study? What are the main experimental approaches? What are the major findings? What are the main conclusions?

2. Hypothesis - Is a hypothesis stated? If so, what is the hypothesis? If the hypothesis is only implied, how would you state it? Is the hypothesis a weak or a strong one, and is it logical and rational based on previous observations?

3. Organization - Are the experimental data presented in a logical manner?

4. Experimental approach - Are the techniques used appropriate to address the hypothesis?

5. Presentation of results - Are the data convincing in their presentation? Are there sufficient and appropriate negative and positive controls? Is there appropriate statistical analysis?

6. Data interpretation - Do the authors over-interpret or under-interpret their data? Do the data support the authors' interpretations?

7. Discussion and conclusions - Do the authors discuss their data in relation to other relevant data in the literature, or do they simply reiterate their results?

8. Follow-up investigation - What follow-up experiments could be pursued to expand upon the findings presented in the paper?

APPENDIX 2: Student Evaluation Grids

Date: _____

Student Name: _____

Committee Member Name: _____

1. Article Critique

Criteria	Article Critique - WRITTEN		
	Exceeds Expectations (9-10)	Meets Expectations (7-8)	Fails to Meet Expectations (<7)
Critique sent to committee by the deadline – 2 weeks before oral comprehensive exam			
Critique well written, logical, concise, with no mistakes			
Student has followed guidelines from Appendix 1			
OVERALL (10%)			

Criteria	Article Critique - ORAL		
	Exceeds Expectations (9-10)	Meets Expectations (7-8)	Fails to Meet Expectations (<7)
Presentation of article			
Student is able to answer questions and to defend ideas and conclusions			
Student is able to explain statistical analyses and experimental approach			
OVERALL (30%)			

APPENDIX 2: Student Evaluation Grids (cond't)

2. Research Project Summary

Criteria	Project Summary - WRITTEN		
	Exceeds Expectations (9-10)	Meets Expectations (7-8)	Fails to Meet Expectations (<7)
Summary is sent to committee by the deadline – 1 week before the oral comprehensive exam			
Summary is well written, well organized and logical, with no mistakes			
Experimental approach is logical to test hypothesis/hypotheses			
Summary includes detailed plan for experiments to complete PhD			
OVERALL (10%)			

Criteria	Project Summary – ORAL Presentation		
	Exceeds Expectations (9-10)	Meets Expectations (7-8)	Fails to Meet Expectations (<7)
Oral Presentation includes background, methods, results, as well as clear hypothesis and objectives			
Presentation is interesting and graphics appropriate			
Student presents rationale(s) for experimental approach			
Student presents data in an organized and understandable manner			
Student demonstrates that research project is progressing			
Student is able to interpret the meaning of their data and to place it in the context of the wider field of research			
OVERALL (10%)			

APPENDIX 2: Student Evaluation Grids (cond't)

Criteria	Project Summary – Questions		
	Exceeds Expectations (9-10)	Meets Expectations (7-8)	Fails to Meet Expectations (<7)
Student is able to answer general knowledge questions pertaining to their general field of research			
Student is able to answer questions directly pertaining to their project			
Student is able to defend hypotheses, ideas, conclusions			
Student is able to discuss the strengths and weaknesses of their data			
Student is able to logically discuss ideas and reason through questions for which he/she does not immediately know the answer			
OVERALL (40%)			

General Comments for student:

APPENDIX 3: Timelines

Person	12 months prior to exam	4 months prior to exam	2 months prior to exam	4 weeks prior to exam	2 weeks prior to exam	1 week prior to exam	Date of exam
ExMed		Remind student and supervisor that they must schedule oral comprehensive exam					
Academic Advisor (AA)	Request topics and/or keywords and/or questions to send to student to be reviewed for oral comprehensive exam		Request journal article from each committee member	Send selected journal article to student			Attend Meeting At the conclusion of the exam, compile all docs, including tracking forms, with scores and signatures to send to committee members, student, supervisor, and to ExMed
Committee Members (3)	Send AA topics and/or keywords and/or questions to student to be reviewed for oral comprehensive exam		Select one journal article related to research area of student and send to AA who will forward to student				Attend Meeting Bring Appendix 2 (evaluation grids) to be filled out at oral comprehensive exam
Supervisor(s)						Send confidential letter of support to AA and committee members	Attend Meeting
Student					Send journal article critique to committee members and AA	Send summary of research project to AA and committee members	Attend meeting Present article critique and research proposal to committee