

***Medical Biophysics Graduate Program  
Regulations & Guidelines  
for the  
Low Level Comprehensive Examination  
(Revised Summer Term 2021)***

**INTRODUCTION**

The Ontario Council of Graduate Studies (OCGS) stipulates that every university graduate program must have a formal means of ensuring that its candidates know more than the narrowly defined, specialized knowledge of their thesis research. The following guidelines and regulations outline the methods in which this will be accomplished in Medical Biophysics.

The Medical Biophysics graduate program has five fields of research:

- Medical Imaging
- Hemodynamics and Cardiovascular Biomechanics
- Microcirculation and Cellular Biophysics
- Orthopedic Biomechanics and Biomaterials
- Radiobiology and Medical Physics in Cancer Treatment and Research

MSc and PhD candidates in the program are expected to have reasonable expertise in the research area of their thesis topic. In preparation for their low level comprehensive oral examinations, they should be well informed about:

- their own field of research in the department
- that of another research group of students and professors assigned by the Graduate Executive Committee

**TWO LEVELS OF KNOWLEDGE**

The highest level is the student's expert knowledge within the research area of their thesis. The student's grasp of this level is tested by regular discussions with their supervisor, advisory committee meetings, seminar presentations, and finally, the oral defence of their thesis. The lowest and broadest level of knowledge is characterized by the student's ability to describe the following to scientists from other disciplines:

- the major research thrusts in their own research field
- that of other researchers in the department

## EXAMINING LOW LEVEL KNOWLEDGE

**Examination Format:** To determine a student's grasp of the low level of knowledge, they will be required to answer questions during an oral examination from members of the Low Level Examination Committee, which usually consists of 2-3 professors. The examination is 15 minutes in length.

**Scheduling the Low Level Examination:** *All graduate students are expected to complete their low level examinations within the first year of their graduate studies. The examination normally occurs within 3 to 4 weeks following the end of the graduate seminars.* All students will receive sufficient notice of the oral examination date(s) and time(s) in order to prepare. If a student is unable to have their low level examination during the aforementioned time frame, they must obtain permission from the Graduate Chair to reschedule their low level examination before the start of the next Fall Term.

## EXPECTATIONS

The Graduate Executive Committee will assign a group of researchers for each student to study.

The examinee will be expected:

- to describe the overall research theme(s) of that group's professors and the individual research projects of their students
- to state the techniques used to accomplish the research
- to describe the key concepts behind the techniques in qualitative terms
- to define any technical terms that might be relevant to the research

## PREPARATION

The **best** way for an examinee to prepare for their low level exam is to speak to the students and research supervisors in the group that they have been assigned. It is especially important to speak to the **supervisor** when a student is relatively new to the project and/or unclear about the project. You should arrange to visit the individual laboratories. As well, the examinee is expected to attend the weekly graduate seminars and to read the corresponding abstracts available on this URL:

[http://www.schulich.uwo.ca/biophysics/graduate/current\\_students/seminars.html](http://www.schulich.uwo.ca/biophysics/graduate/current_students/seminars.html)

However, regular attendance at the seminars and reading the abstracts is only a starting point. In the event that an abstract is missing on the above URL or a student did not present a seminar, the examinee will be required to speak to that student directly to discuss their research area.

### Sample Questions:

The following are sample questions that will assist the examinee in understanding the required level of knowledge.

1. What research is Professor X doing? What are their students working on?

In answering this question, the examinee should be able to state what questions Professor X is trying to address and what techniques (e.g. 3D ultrasound, MR) they are using and whether they are conducting simulations, phantom experiments, animal experiments, etc. Themes, techniques and approaches that are common to all of their students' projects should especially be noted. The examinee should also know similar details for each of the professor's students.

2. Part of the answer to Question 1 might be that Professor X's research centers around 3D ultrasound. A reasonable follow-up question might be to qualitatively explain the physics of 2D ultrasound and then explain how 3D images are formed. The examinee would not be required to know details such as transducer types and frequencies, equipment manufacturers, etc.

3. Professor X may also be working on metastasis. In this case, the examinee should be able to define the term "metastasis."

The lack of an abstract on the aforementioned URL or a presentation at the weekly seminars cannot be used as grounds for omitting that student's research area from the examinee's assigned, research group. Also, in many cases, the abstracts will be out-of-date, and it is imperative to speak to the individual students and professors assigned to you.

## **OUTCOMES**

The outcome of the examination (pass/fail) will be announced within one week of the examination. If the examinee is not successful on their first attempt, a make-up examination will be arranged with the same group assignment but potentially different examiners. In the event of a second failure, the Graduate Executive Committee will make recommendations to the student and supervisor on a course of action that will usually involve the study of key concepts under the direction of the supervisor or through courses.