

# **Oral Exam Instructions**

## *1. Overview and format of the exam.*

Oral exams are typically around 2 hours in duration, but you should reserve a room for 3 hours just in case it runs long (see Section 2). Your advisor will introduce you and the committee, then start the meeting. The exam will begin with you defending a written research proposal of your creation (see Section 3). This is usually done on PowerPoint, but could also be done as a chalk-talk. Faculty will interrupt you, and you should be prepared to go to the board to answer questions. Questions can range from directly related to the proposal to questions about courses (see Section 4). The proposal defense portion of the exam takes 60–90 minutes. There is usually a 5 minute break before the second part of the exam. During the final 45–60 minutes you will give a progress report on your thesis research, and faculty may ask questions about your science and your future work (see Section 5). This second phase is still part of the exam, but it usually has less fundamental questioning. At the end, you will leave the room and the faculty will deliberate to determine if you passed or failed the exam. You will then be readmitted to the room, informed of your results, and then asked to sign some forms.

## *2. Scheduling your oral exam.*

Organic graduate students in our department should take their oral exam in the 3<sup>rd</sup> year, ideally in the fall term. The goal is for the faculty to check your progress and make recommendations for the final years of your time at OSU. If you take your exam too late (4<sup>th</sup> year, 5<sup>th</sup> year) there may not be time for you to make adjustments.

Contact your committee by email around the end of your 2<sup>nd</sup> year, and notify them that it is time for you to take your oral exam. Circulate a doodle (or equivalent) poll to find a suitable time. The exam takes ~2 hours, but you should schedule the event for 3 hours to ensure enough time. Reserve a room using the link on the departmental homepage. The room should have screen capabilities and a white board (often LPSC 239 or LPSC 259, which can be reserved through the link on the department homepage).

When you have a time and location identified, inform the graduate school that you have scheduled your oral exam. They will issue appropriate forms to your Graduate Council Representative (GCR).

## *3. The Research Proposal.*

You will need to prepare a written independent proposal of approximately 10 pages. Follow NIH proposal formatting guidelines (at least 1/2" margins, 11 point font, Arial typeset recommended). In most cases, the proposed research will not be actually be performed. The proposal should include introduction,

background, proposed research, conclusion, and appropriate references in ACS style. The topic of the proposal should be outside your immediate area. For example, if your PhD research involves developing Diels–Alder methodology, your proposal should not involve exploring other pericyclic reactions. However, proposing an alkaloid total synthesis would be distant enough to be acceptable. If you are unclear if your proposal is too close to your PhD research, ask your advisor.

*Circulate your written proposal via email with the committee (including the GCR) at least 2 weeks prior to your exam.*

The proposal should be suitable ambitious as to have plenty of material to discuss. A project that would represent one PhD thesis is the appropriate “size” of the proposal. Try to avoid proposed projects that are so large it would take multiple coworkers several years to complete (e.g., a synthesis of a natural product with 25 stereocenters).

The proposed research should also be presented as a PowerPoint during your exam. Present introduction and background information so that the committee can appreciate the “gap” in the literature that your proposed research seeks to fill. The point of this exercise is to demonstrate to the committee that you can think critically and originally about a research problem that is outside of your current thesis topic. Avoid proposing incremental improvements on the current state-of-the-art. Your goal should be to convince the committee that your proposal is worth spending effort (i.e., research funds and student time) to address. In general, proposal talks should “get to the point” quickly by presenting the most important aspects of the proposal relatively early in the presentation.

#### *4. Questions during the exam.*

*Know what you’re proposing.* You will be asked questions during the exam about your proposal. You should know the mechanism(s) and theory behind everything you are proposing. Since it was your choice to create a proposal in this area, you should know a substantial amount related to the proposed science. You should be able to discuss relevant background, prior art, competing strategies, and “big players” in the field.

*Know what you’ve seen in graduate courses.* We expect that you know what we’ve taught you in the graduate courses. You won’t need to remember every detail from the courses, but major themes are must-know information. You should not have trouble reproducing material and topics featured in the graduate curriculum. We teach you this information, and we expect you know it.

*Know what’s in the undergraduate curriculum.* As a graduate student you are expected to know the fundamentals of our field, and you are expected to serve as a TA in our department. You must know the basic fundamentals in the undergraduate curriculum.

*Know the importance of your research project and the literature surrounding it.* You should know and be able to explain the purpose of your project and what is novel about it. You should have a reasonable awareness of the literature

surrounding your project. You should also have some idea of what's in the current chemical literature.

## *5. Research Update.*

Prepare a brief (~25 minute) presentation that updates your committee on your progress toward your PhD degree. You can include a brief introduction and background. However, you should spend the majority of your time updating the committee on your actual research progress. Describe any papers you have published and any manuscripts in preparation. Show any unpublished work and give an indication of how these sub-projects will be concluded. In short, you want to clearly show your committee what you have accomplished and what you will likely accomplish before your thesis defense.

The best technique for communicating your results to the committee is by organizing this portion in a proposed thesis outline. Discuss the different chapters of your thesis, and tell us how much progress you've made (e.g., manuscript 1 is 100% finished, manuscript 2 is 50% written and 75% of the SI is complete).

## *6. Graduate Council Representative.*

Recall that your GCR is a representative of the graduate school who is present to make sure the exam is conducted properly and fairly. They are representing you during the exam. If you feel that something inappropriate occurred during the exam, you should contact your GCR with your concern. While you are outside the exam room, the GCR will ask the committee these questions:

*Did the committee have sufficient time to review the proposal?*

*Did the committee have time to examine the student?*

*Was the student given sufficient time to respond to the questions?*

*Did the student pass?*

*Note that if one committee member feels you have shown insufficient mastery of the material you will pass with one dissenting vote. If two or more committee members believe you have shown insufficient mastery of the material, you will fail.*