

## **GENERAL EXPECTATIONS FOR THE PHD ORAL QUALIFYING EXAMINATION UC RIVERSIDE – DEPARTMENT OF EARTH AND PLANETARY SCIENCES**

The PhD oral qualifying examination is a test of fact-based understanding and reasoning. Successful PhD candidates apply familiar knowledge to unfamiliar situations. Exhaustive knowledge of a discipline is neither necessary nor sufficient to pass the oral qualifying examination. Adequate and well-marshalled knowledge, combined with sound habits of mind, leads to acceptable performances. PhD-level habits of mind are best revealed by responses to challenges for which the solution has not been memorized. Research, after all, is directed at questions for which the answers are not known. The written proposals are a preliminary test of a PhD candidate's ability to identify research challenges and frame effective approaches to their resolution. GEO 250 should already have provided sufficient practice, feedback and role models for oral presentation.

At the start of the oral examination period, examinees briefly review their written research proposals. This rehearsed opening is intended to

- settle the examinee into the process of talking to the committee and
- identify subject areas in which the examinee should be most comfortable and knowledgeable.

It is not intended to limit the scope of questions and discussion. Examinees also provide a CV or transcripts. Courses taken and taught (as instructor or TA) guide the committee to subject areas beyond the PhD proposals for which a general knowledge base may reasonably be expected.

For the rest of the examination, individual examiners initiate lines of questioning that might start with specific items of fact but are intended to progress toward a deeper discourse that reveals whether examinees can

- defend and elaborate the contents of their own proposals,
- use technical and logical terms clearly and precisely,
- summarize and prioritize bodies of knowledge for non-experts,
- derive and defend general principles and theories from facts remembered,
- counter common misconceptions,
- reason from facts (given or remembered) to interpretations and expectations for new situations, and
- design tests of interpretations and expectations put forward.

Several sets of questions are typically needed to allow the examinee to demonstrate these various skills. Examiners will often not have particular "right" answers in mind. They will be listening to the reasoning.

Successful candidates rarely provide completely satisfying answers to all questions. It is sufficient that a majority of discussion items reveal habits of mind that transcend mere feats of memory. These habits include

- listening intelligently,
- thinking before speaking,
- logically connecting facts with conclusions, and
- correcting and modifying conjectures in response to new information

Perhaps only one set of responses in a successful examination reveals the flair and originality that is characteristic of the very best PhD candidates.

The likelihood of failure increases with the number of intellectual skills and habits that a candidate cannot demonstrate, given good opportunities. Sure grounds for failure, perhaps without a second attempt, include

- an unprofessional initial oral presentation,
- inability to explain diagrams selected in advance for display in the rehearsed oral presentation,
- lack of factual knowledge sufficient to develop any lines of reasoned response,
- failure to engage with any questions beyond statements of facts remembered,
- persistently misinterpreting the questions asked,
- routinely misrepresenting guesses as knowledge or reasoning, and
- combative or stubborn defense of mistaken facts and conjectures shown to be wrong.

## PHD ORAL QUALIFYING EXAMINATION RUBRIC

4	significantly exceeds expectations	(excellent)
3	meets expectations	(good)
2	likely to meet expectations after more preparation	(re-examination justifiable)
1	unlikely to meet expectations after more preparation	(re-examination not justifiable)

### Quality of Spontaneous Oral Communication in Response to Questions

- \_\_\_\_\_ Responds directly and professionally
- \_\_\_\_\_ Articulates clearly, with minimal verbal clutter, without prevarication
- \_\_\_\_\_ Uses technical and logical terms clearly and precisely
- \_\_\_\_\_ Admits to facts not known or not remembered
- \_\_\_\_\_ Respects there may be multiple fact-based explanations

### Substantive Knowledge, Attitudes, and Skills Demonstrated in Response to Questions

- \_\_\_\_\_ Knows basic tenets of earth science
- \_\_\_\_\_ Understands topic subject area in depth
- \_\_\_\_\_ Exhibits trained scientific thought
- \_\_\_\_\_ Summarizes and prioritizes bodies of knowledge for non-experts effectively
- \_\_\_\_\_ Connects facts with conclusions logically, tests with hypotheses
- \_\_\_\_\_ Integrates scientific theory and practice cogently

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### Expectations for Rehearsed Proposal Presentation

- \_\_\_\_\_ Establishes the research question or hypothesis clearly
- \_\_\_\_\_ Places topic significance in broader context of EARTH AND PLANETARY SCIENCES
- \_\_\_\_\_ Demonstrates thorough knowledge of prior work on the topic
- \_\_\_\_\_ Follows a logical progression of ideas
- \_\_\_\_\_ Supports assertions with sufficient facts
- \_\_\_\_\_ Summarizes findings and states conclusions effectively
- \_\_\_\_\_ Provides effective and professional visual aids

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COMMENTS