**Graduate Program in Pharmaceutical Science**

**Comprehensive and Doctoral Examination Evaluation Form**

(Approved by GPC 05/19/2009)

**Choose One:**
- Comprehensive Examination Evaluation
- Doctoral Examination Evaluation

**Student Name:**

**Committee Member:**

**Date of Examination:**

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<th>Learning Outcomes</th>
<th>Indicators</th>
<th>Level of Achievement</th>
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| Acquire expert knowledge of biological, chemical, and analytical processes related to pharmaceutical sciences. | Student demonstrates mastery of skills necessary to conduct a thorough literature review.  
  - Familiarity with information retrieval resources (computer literacy, database searching, use of internet, library resources)  
  - Ability to conduct an effective literature search.  
  - Ability to identify and analyze major contributions to the field.  
  In any written work:  
  - Major contributors to the field are included in the bibliography  
  - Landmark papers are identified and are cited in the appropriate context  
  - Background section conveys understanding of major contributions, the questions that have been addressed, and how these contributions have resulted in the current status of the field | 1 2 3 4 5 NA |
| Master a field of scholarship related to a specific research topic. | Student demonstrates knowledge and understanding of the topic that is appropriate for their experience and level of education:  
  - Major contributors to the field are identified along with their contributions.  
  - Student demonstrates knowledge and understanding of recent advances in the field, as well as who contributed what work and why it was important.  
  - Student is able to explain the evolution of thinking in the field in a way that is clear and understandable to scientists not familiar with the work. | 1 2 3 4 5 NA |

**Meets or Exceeds the Standard**

**Partially Meets the Standard**

**Does Not Meet the Standard**
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| Use the scientific method to generate, analyze, and interpret scientific data    | **Student demonstrates the ability to identify an important research question:**  
- Significant research issues and aims are identified in relation to an appropriate research context and an appropriate body of theory and knowledge  
- The student has derived from the aforementioned issues a set of scholarly questions.                                                                                                             | 1 2 3 4 5 NA         |
| relevant to the identification, analysis, and use of therapeutic agents.         | **Student demonstrates the ability articulate a mechanistic hypothesis and an approach for testing the hypothesis**  
- Hypothesis is clearly stated and asks a ‘how’ or ‘why’ question.  
- Predictions follow logically from the hypothesis and are testable.                                                                                                         | 1 2 3 4 5 NA         |
| • Generate mechanistic hypotheses based on prior evidence                        | **Student demonstrates the ability design a detailed experimental plan which:**  
- Tests specific predictions  
- Demonstrates appropriate knowledge and use of the latest or the most appropriate research methodologies and analytical techniques  
- Is likely to produce/has produced definitive, interpretable results                                                                                                           | 1 2 3 4 5 NA         |
| • Derive specific predictions that are hypothesis driven                          | **Student demonstrates the ability to understand and appropriately use statistical methods to analyze and evaluate data**                                                                                                                                                                                                                                                                                       | 1 2 3 4 5 NA         |
| • Plan detailed experimental procedures that test specific predictions           | **Student demonstrates the ability to generate interpretations and conclusions that are justified by experimental data:**  
- Results are based on a well-crafted experimental plan and rigorous scientific methods.  
- Interpretations and conclusions are justified and follow logically from the data.  
- Analysis is thorough and unbiased (all results are considered, alternate interpretations are considered).                                                                                                                  | 1 2 3 4 5 NA         |
| • Gather data via experimentation                                                 |                                                                                                                                                                                                                                                                                                                                               |                      |
| • Appropriately analyze and interpret data.                                      |                                                                                                                                                                                                                                                                                                                                               |                      |

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|                  | Student demonstrates the ability to communicate research ideas, results, and conclusions, effectively:  
|                  | - Arguments are logical and coherent.  
|                  | - Ideas are articulated clearly and are understandable to a range of audiences.  
|                  | - Unfamiliar terminology is defined.  
|                  | - Content is well organized and has appropriate breadth and depth.  
|                  | - Audiovisual materials are appropriate, of good quality, and effective.  
|                  | - Student answers questions clearly and accurately, and is able to defend interpretations and conclusions.  
|                  | The thesis/comprehensive exam document (when applicable):  
|                  | - Is written in English  
|                  | - Is understandable to scientists familiar with the field of work  
|                  | - Is satisfactory in its literary and technical presentation and structure with a full bibliography and references  
|                  | - Is free of grammatical and stylistic errors  
|                  | - Embody the results of a research program which may reasonably be expected of a student after three or more years of full-time effort, formulated and carried out by the candidate in consultation with the research mentor  
|                  | - Consists of the candidate’s own account of his/her investigations  
|                  | - Indicate in what respect the findings advance the study of the subject  
|                  | - Represent a distinct and significant contribution to the subject  
|                  | - Demonstrates the exercise of critical judgment with regard to both the candidate’s own work and that of other scholars in the field  
|                  | - Demonstrates the candidate’s ability to design and implement an independent research project  
|                  | - Takes due account of previously published work on the subject  
|                  | - Makes clear the sources from which information has been derived, the extent to which the work of others has been used, and the areas which are claimed as original  
|                  | - Contains elements which, after necessary revisions, would merit publication in a medium appropriate to the  

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