Ph.D. Qualifying Exam Evaluation Form

Performance Criteria	Rating (U / S / P)	Comments
Paper Summary		
Relevant Disciplines (synthesis of literature cited)		
Research Methods		
Engineering Models		
Synthesis and Future Directions		

Ph.D. Qualifying Exam Rubric

Performance Criteria	Unsatisfactory	Satisfactory	Proficient
Paper Summary	Difficulty defining the problem identified in the paper(s), its importance, and/or primary results and conclusions of each paper.	Articulates the engineering or scientific problem, its importance, and some primary results and conclusions of the papers discussed during the exam.	Articulates the key contributions of each paper discussed and provides insights into their likely impacts on research and practice that go beyond the scope of the paper(s) provided.
Relevant Disciplines (synthesis of literature cited)	Cannot identify the disciplines and sub-disciplines of relevance within the paper and articulate the benefits of the combination of these disciplines. Cannot see beyond the narrow scope of one's own research specialty.	Able to identify the disciplines and sub-disciplines of relevance to the papers discussed and understands the benefits of the combination of these disciplines.	Articulates the benefits and novelty of the combination of disciplines. Can identify some unique research issues that emerge from the combination.
Research Methods	Partially able to articulate the research methods and experiments used. Cannot evaluate correctly if the methods and experiments were appropriate.	Understands the primary research method used in the papers discussed. Can analyze the suitability of the methods and experiments for the research problems addressed.	Evaluates the novelty of the research methods and experiments used in the papers discussed. Goes beyond the paper to discuss alternative methods and their benefits.
Engineering Models	Does not convey the scope, assumptions, and limitations of the engineering models in each paper.	Describes the main engineering models used in each paper and understands their scope, assumptions, and limitations.	Conveys insights beyond those described in the papers into the main engineering models used and their scope, assumptions, and limitations.
Synthesis and future directions	Difficulty articulating implications of the article's finding on the field, unclear how these finding would impact future work of the field in general or the student's own research in particular	Articulates the gaps that remain to be addressed in the article or identifies areas for further work. Understands and can communicate how this article might inform their own research.	Clearly identifies experiments or models that would address current gaps in understanding as identified in the paper(s). May also bring in knowledge from other literature that has addressed these gaps.

Explanation of Performance Criteria

Paper Summary: The exam committee is strongly encouraged to ask the student to summarize one or more of the papers. The committee may ask about the objectives or hypotheses raised in a paper.

Relevant Disciplines: The exam committee may ask the student how a paper fits into the literature of the research area and the students own research. If several research areas are combined in the student's research topic, the committee can ask about the benefits and/or drawbacks of this combination of areas.

Research Methods: The exam committee may ask the student to identify the specific research methods used in a paper, to identify the general research methods, to explain why methods were selected, to propose alternative methods, etc. Also, similar questions about experimental methods and specific experiments would be appropriate.

Engineering Models: The exam committee may ask about the mathematical, information, logic, etc. models that were used in a paper. Questions can ask the student to explain the models used, comment on their suitability, or discuss their pros and cons, limitations, etc. Students may be asked to explain their basic mathematical understanding behind the model used.

Synthesis and Future Directions: The exam committee may ask about how the findings in the article impact the future of the field. This could include asking the student to point out limitations in the article that should be addressed by future work, with suggestions of how this might be done or by asking the student to think specifically about the impact of the work on their own future research directions.