# Ph.D. Candidacy Exam

**CRITERION**

1. **Demonstrates potential for achieving a breadth & depth and integration of advanced biological and engineering knowledge at the graduate level towards solving BMEG problems**
   - **Exceptional**
     - Demonstrates knowledge of biological and engineering principles without prompting
     - Consistently able to integrate engineering and biological knowledge to provide insight in a biomedical system
     - Able to use new material to solve a problem on his/her feet
   - **Satisfactory**
     - Explains biological and engineering principles but with some prompting
     - Demonstrates potential that student can gain insight into a biological problem using engineering principles
   - **Remedial**
     - Fails to articulate simple concepts in cell/tissue or physiology or engineering
     - Unable to explain a biomedical system at its functional level or solve basic engineering problems
     - Does not demonstrate any scope/potential for achieving this criteria

   - **5** - Exceptional
   - **4** - Very Good
   - **3** - Satisfactory
   - **2** - Needs improvement
   - **1** - Remedial

2. **Clearly states research problem within the context of literature and current challenges in field of study**
   - Demonstrates value of research in advancing knowledge in field of study
   - Formulates a concise and clear research problem
   - Efficiently places his/her work in larger contexts, typically integrates knowledge from multiple sources toward his/her own approach & the field at large
   - Formulates research problem with some prompting
   - Shows some ability to place his/her work in a larger context; occasionally able to integrate knowledge from other sources toward own work or field at large
   - Unable to form a clear research problem
   - Unable to place body of work into the big picture; difficulty integrating knowledge from multiple sources toward his/her own work or the field at large

   - **5** - Exceptional
   - **4** - Very Good
   - **3** - Satisfactory
   - **2** - Needs improvement
   - **1** - Remedial

3. **Provides sound and appropriate experimental approach for analyzing/interpreting research results**
   - Has sufficient preliminary data to support experimental approach
   - Experimental approaches are rationally designed toward addressing hypotheses based on preliminary data
   - Identifies errors & limitations [quantitative evidence for errors – e.g. power analysis]
   - Able to describe approaches to interpret results objectively, consistently differentiates objective interpretation from conjecture & speculation
   - Reasonable experimental approaches based on preliminary data
   - Mostly able to recognize errors & limitations
   - Needs some assistance in making objective interpretations of data; occasionally recognizes conjecture and speculation
   - Inability to formulate research problem/ lack of preliminary data
   - Unfocused responses
   - Cannot detect his/her study’s limitations and errors
   - Makes vague statements regarding analysis approaches with no clear tie to question
   - Unable to defend statements

   - **5** - Exceptional
   - **4** - Very Good
   - **3** - Satisfactory
   - **2** - Needs improvement
   - **1** - Remedial
| 4. Effectively and efficiently communicates research proposal in written and oral forms | - Develops a chain of logic that is transparent & easy to follow  
- Offers relevant, targeted information  
- Engages committee in the clarification process  
- Able to restate question in own words  
- Easily uses technical terminology and concepts to make points | - Offers a chain of logic but it is not particularly transparent or easy to follow  
- Offers mostly targeted, relevant information but shows potential for improvement  
- Is aware of technical terminology but has difficulty connecting it to explanations | - Rambles and sidesteps the question  
- Unable to make list of clear goals and questions  
- Responds to different question than asked |

| | □ 5 - Exceptional | □ 4 – Very Good | □ 3 - Satisfactory | □ 2 – Needs improvement | □ 1 - Remedial |

**Comments and recommendations for future actions**

* A minimum score of ≥3 in all categories required for pass  
* A score of 1 in any category is an automatic fail

| Final Outcome | □ Pass | □ Pass (with contingency)  
* see recommendations for future actions | □ Fail |
## Advisory/Dissertation Committee

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## Graduate Coordinator/Department Head

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