**BME GRADUATE MILESTONES EVALUATION FORM**

**STUDENT:** _____________________________  **PROGRAM:** □ BME □ PKU

**MATRICULATION TERM/YEAR:** _____________

**RESEARCH TRACK:**  □ BIOMATERIALS □ CARDIOVASCULAR □ CELLULAR □ INTEGRATIVE BIOSYSTEMS □ MEDICAL IMAGING □ NEUROENGINEERING

**MILESTONE:** □ QUALIFYING EXAM □ THESIS PROPOSAL □ THESIS DEFENSE □ OTHER ________________

**FACULTY MEMBER:** _______________________  **DATE:** _______________________

<table>
<thead>
<tr>
<th>CRITERION</th>
<th>EXCEPTIONAL</th>
<th>PROFICIENT</th>
<th>REMEDIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Applies a breadth &amp; depth of advanced biological knowledge at the graduate level towards solving bioengineering problems</td>
<td>• Consistently provides detailed answers on bio-mechanism without prompting&lt;br&gt; • Able to explain the biological aspects of the problem with deep insight&lt;br&gt; • Able to explain the biological system at the functional/structural/factual level</td>
<td>• Provides details but with some prompting&lt;br&gt; • Demonstrates insight, but needs prompting to demonstrate deep insight&lt;br&gt; • Able to explain the biological system at the structural/factual level</td>
<td>• Fails to articulate simple concepts in cell/tissue or physiology&lt;br&gt; • Unable to explain how bio events inform design&lt;br&gt; • Unable to explain a biological system at its functional level&lt;br&gt; • Knows biological facts but can't apply at engineering/quantitative level</td>
</tr>
<tr>
<td>Criterion 1</td>
<td>5-Exceptional</td>
<td>4-Very Good</td>
<td>3-Proficient</td>
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<tr>
<td>2. Applies a breadth &amp; depth of advanced engineering skills and knowledge towards solving bioengineering problems</td>
<td>• Consistently provides details of approach to problem without prompting&lt;br&gt; • Able to explain engineering principles as relevant to the biological problem&lt;br&gt; • Demonstrated the ability to gain insight into a biological problem using engineering principles</td>
<td>• Offers an approach but with some prompting&lt;br&gt; • Offers some general detail of engineering knowledge&lt;br&gt; • Able to identify engineering principles but not necessarily to solve a biological problem</td>
<td>• Unable to see relationship between engineering and biological formulations of a problem&lt;br&gt; • Unable to solve basic engineering problems&lt;br&gt; • Knows techniques but not how to use them</td>
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<tr>
<td>Criterion 2</td>
<td>5-Exceptional</td>
<td>4-Very Good</td>
<td>3-Proficient</td>
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<tr>
<td>3. Integrates advanced biological and engineering concepts in solving complex biomedical problems</td>
<td>• Consistently demonstrates awareness of how biology drives answers and checks that answers accurately reflect biological problem&lt;br&gt; • Able to develop and explain an experimental design&lt;br&gt; • Able to use new material to solve a problem on his/her feet</td>
<td>• Able to explain biological phenomena in engineering terminology&lt;br&gt; • Offers a design but unable to clearly explain it, some information irrelevant&lt;br&gt; • Slow to incorporate new material into the problem</td>
<td>• Unable to deal with or incorporate new information&lt;br&gt; • Unable to demonstrate an understanding of the connections between an engineering and biological formulation of a problem</td>
</tr>
<tr>
<td>Criterion 3</td>
<td>5-Exceptional</td>
<td>4-Very Good</td>
<td>3-Proficient</td>
</tr>
</tbody>
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### CRITERION 4

**4. Demonstrates an ability to read, analyze, and synthesize literature**

- **Exceptional**
  - Routinely recognizes whether experimental approaches are rationally designed toward addressing hypotheses
  - Easily identifies errors & limitations
  - Able to interpret results objectively, consistently differentiates objective interpretation from conjecture & speculation
  - Regularly places body of work in larger contexts, typically integrates knowledge from multiple sources toward student’s own approach & the field at large

- **Proficient**
  - Often analyzes research critically
  - Mostly able to recognize errors & limitations
  - Needs some assistance in making objective interpretations of data; occasionally recognizes conjecture and speculation
  - Shows some ability to place work in a larger context; occasionally able to integrate knowledge from other sources toward own work or the field at large

- **Remedial**
  - Demonstrates general trust in all published literature
  - Cannot detect a study’s limitations and errors
  - 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

### CRITERION 5

**5. Utilizes a logical approach in the design, implementation, and evaluation of a research strategy to solve a complex biomedical problem**

- **Exceptional**
  - Able to clearly articulate rationale in defense of a claim without prompting

- **Proficient**
  - Gives a partial chain of logic
  - Needs prompting to translate technical terminology into easily understandable terms
  - Demonstrates understanding of rationale but needs prompting to apply it to the problem

- **Remedial**
  - Unfocused responses
  - Makes vague statements with no clear tie to question
  - Unable to defend statements

### CRITERION 6

**6. Effectively and efficiently communicates ideas in an organized manner to both engineers and scientists, as well as expert and novice audiences**

- **Exceptional**
  - Develops a chain of logic that is transparent & easy to follow
  - Offers only 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
  - Able to explain technical information in lay terminology

- **Proficient**
  - Offers a chain of logic but it is not particularly transparent or easy to follow
  - Offers mostly targeted, relevant information
  - Is aware of technical terminology but has difficulty connecting it to explanations

- **Remedial**
  - Rambles and sidesteps the question
  - Unable to make list of clear goals and questions
  - Responds to different question than asked

### Comments (please use back of sheet if more space is needed)

**Overall Score**

- **Exceptional**
- **Proficient**
- **Remedial**

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*This criterion should NOT be included when scoring a student during his/her qualifying exam.*