# BME GRADUATE MILESTONES EVALUATION FORM

**DATE:** ______________  **STUDENT:** ____________________________  **PROGRAM** (circle one): BME PKU

**MATRICULATION TERM/YEAR:** ______________  **FACULTY MEMBER:** ____________________________

**TRACK** (circle one):  
- Biomechs/Mechanobio  
- Comp Biomed Sys Analy  
- Biomed Imag/Opt  
- Cell/Mol/Biomat Eng  
- Healthcare Info/Tech

**MILESTONE** (circle one):  
- Qualifying Exam  
- Thesis Proposal  
- Thesis Defense  
- Other: ______________

**RANKING:** 5=Exceptional; 4=Very Good; 3=Proficient; 2=Needs Improvement; 1=Remedial

## CRITERION

### EXCEPTIONAL
- Consistently provides detailed answers on bio-mechanism without prompting  
- Able to explain the biological aspects of the problem with deep insight  
- Able to explain the biological system at the functional/structural/factual level

### PROFICIENT
- Provides details but with some prompting  
- Demonstrates insight, but needs prompting to demonstrate deep insight  
- Able to explain the biological system at the structural/factual level

### REMEDIAL
- Fails to articulate simple concepts in cell/tissue or physiology  
- Unable to explain how bio events inform design  
- Unable to explain a biological system at its functional level  
- Knows biological facts but can’t apply at engineering/quantitative level

<table>
<thead>
<tr>
<th>Criterion 1</th>
<th>5</th>
<th>4</th>
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| 1. Applies a breadth & depth of advanced biological knowledge at the graduate level towards solving bioengineering problems | Consistently provides detailed answers on bio-mechanism without prompting  
- Able to explain the biological aspects of the problem with deep insight  
- Able to explain the biological system at the functional/structural/factual level | Provides details but with some prompting  
- Demonstrates insight, but needs prompting to demonstrate deep insight  
- Able to explain the biological system at the structural/factual level | Fails to articulate simple concepts in cell/tissue or physiology  
- Unable to explain how bio events inform design  
- Unable to explain a biological system at its functional level  
- Knows biological facts but can’t apply at engineering/quantitative level |

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<thead>
<tr>
<th>Criterion 2</th>
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| 2. Applies a breadth & depth of advanced engineering skills and knowledge towards solving bioengineering problems | Consistently provides details of approach to problem without prompting  
- Able to explain engineering principles as relevant to the biological problem  
- Demonstrated the ability to gain insight into a biological problem using engineering principles | Offers an approach but with some prompting  
- Offers some general detail of engineering knowledge  
- Able to identify engineering principles but not necessarily to solve a biological problem | Unable to see relationship between engineering and biological formulations of a problem  
- Unable to solve basic engineering problems  
- Knows techniques but not how to use them |

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<tr>
<th>Criterion 3</th>
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| 3. Integrates advanced biological and engineering concepts in solving complex biomedical problems | Consistently demonstrates awareness of how biology drives answers and checks that answers accurately reflect biological problem  
- Able to develop and explain an experimental design  
- Able to use new material to solve a problem on his/her feet | Able to explain biological phenomena in engineering terminology  
- Offers a design but unable to clearly explain it, some information irrelevant  
- Slow to incorporate new material into the problem | Unable to deal with or incorporate new information  
- Unable to demonstrate an understanding of the connections between an engineering and biological formulation of a problem |
<table>
<thead>
<tr>
<th>CRITERION</th>
<th>EXCEPTIONAL</th>
<th>PROFICIENT</th>
<th>REMEDIAL</th>
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</table>
| 4. Demonstrates an ability to read, analyze, and synthesize literature*  | • 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 | • 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 field at large | • 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 |
| 5. Utilizes a logical approach in the design, implementation, and evaluation of a research strategy to solve a complex biomedical problem | • Able to clearly articulate rationale in defense of a claim without prompting                  | • 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 | • Unfocused responses  
• Makes vague statements with no clear tie to question  
• Unable to defend statements |
| 6. Effectively and efficiently communicates ideas in an organized manner to both engineers and scientists, as well as expert and novice audiences | • 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 | • 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 | • Rambles and sidesteps the question  
• Unable to make list of clear goals and questions  
• Responds to different question than asked |

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<tr>
<th>Criterion 4</th>
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<tr>
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<tr>
<td>Criterion 6</td>
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Comments *(please back of sheet if more space is needed)*

Overall Score | 5 | 4 | 3 | 2 | 1 |

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