

BME GRADUATE MILESTONES EVALUATION FORM

DATE: _____ STUDENT: _____ PROGRAM (circle one): BME PKU

MATRICULATION TERM/YEAR: _____ FACULTY MEMBER: _____

TRACK (circle one): Biomechs/Mechanobio Biomed Imag/Opt Cell/Mol/Biomat Eng
Comp Biomed Sys Analy 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 | PROFICIENT | REMEDIAL |
|--|---|---|---|
| 1. Applies a breadth & depth of advanced biological knowledge at the graduate level towards solving bioengineering problems | <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • 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 |
| Criterion 1 | 5 | 4 | 3 2 1 |
| 2. Applies a breadth & depth of advanced engineering skills and knowledge towards solving bioengineering problems | <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • 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 |
| Criterion 2 | 5 | 4 | 3 2 1 |
| 3. Integrates advanced biological and engineering concepts in solving complex biomedical problems | <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • 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 |
| Criterion 3 | 5 | 4 | 3 2 1 |

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

| CRITERION | EXCEPTIONAL | PROFICIENT | REMEDIAL | | |
|--|---|---|---|---|---|
| 4. Demonstrates an ability to read, analyze, and synthesize literature* | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> 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 4 | 5 | 4 | 3 | 2 | 1 |
| 5. Utilizes a logical approach in the design, implementation, and evaluation of a research strategy to solve a complex biomedical problem | <ul style="list-style-type: none"> Able to clearly articulate rationale in defense of a claim without prompting | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> Unfocused responses Makes vague statements with no clear tie to question Unable to defend statements | | |
| Criterion 5 | 5 | 4 | 3 | 2 | 1 |
| 6. Effectively and efficiently communicates ideas in an organized manner to both engineers and scientists, as well as expert and novice audiences | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> Rambles and sidesteps the question Unable to make list of clear goals and questions Responds to different question than asked | | |
| Criterion 6 | 5 | 4 | 3 | 2 | 1 |
| 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.