Introduction: The Doctoral Preliminary Exam is the first of 3 assessments taken by a student in GW BME doctoral program. The remaining two exams are the Doctoral Dissertation Research Proposal Exam and Doctoral Dissertation Defense. The objective of the Doctoral Preliminary Exam is to assess the readiness of the doctoral student early in his/her studies to successfully complete doctoral dissertation research.

Suggested time to complete the Doctoral Preliminary Exam: A doctoral student should complete this exam within 6 months after completing his/her graduate coursework (with only doctoral research dissertation credits remaining). For doctoral students that already have an MS degree this would typically happen after the first year of studies, and for the students without MS degree this would typically happen after the second year of studies in the GW BME program.

Doctoral Preliminary Exam Committee: This committee consists of the student’s primary doctoral advisor(s) and two additional tenured or tenure track faculty members of the BME department (a minimum of 3 BME faculty is required). The responsibilities of this committee are to: 1) prepare an exam question that is within the general area of the student’s doctoral research but significantly different from the student’s specific dissertation topic, 2) administer the exam (as described below), and 3) provide an overall numerical score that will determine whether the student passed the exam. The exam begins when the Chair of the exam committee (which cannot be the student’s doctoral advisor) provides the exam question to the student. This exam question cannot be prepared by the student’s doctoral advisor. The student will then have 10 days to prepare the written portion of the exam after obtaining the question, and submit this written exam report to the committee. The oral exam will be scheduled on the 11th day after the student received the question.

Grading Policies: Each member of the exam committee will provide one numerical score (ranging from from 1-10) for the written portion of the exam, and one numerical grade (1-10) for the oral portion of the exam. All of the written and oral scores from the committee members are averaged and rounded up to the first decimal point. The final score of 8.0-10.0 is considered a passing score. If the student receives an average score of 6.0 to 7.9 then he/she will be allowed to revise the lower scoring portions of the exam (written and/or oral) and those portions to the same committee for re-scoring. The student will have 10 additional days to prepare for resubmitting the revised written portion and/or retaking the oral exam. A score of 1.0 to 5.9 indicates exam failure. In this case the student will be allowed to take a new exam within 6 months after failing the first exam. A completely new exam question will be prepared for this second attempt. The student will be terminated from the doctoral program if the second attempt results in failure. Any student complaints regarding the scoring of the BME preliminary exam will be referred to the BME Department’s Academic Standards Committee.

Form: The Doctoral Preliminary Exam form is posted on GW BME web site and requires signatures of all exam committee members to indicate pass or failure of the exam.

Instructions: The written exam should conform to the formatting and instructions for an NIH R21 proposal submission and should be 7 pages long with 1 page of Specific Aims, and 6 pages of Research Strategy (with 1-2 pages describing Significance and Innovation and 4-5 pages of Research Approach). Details are provided below:
Written Portion: The objective of the written portion is to communicate using a research proposal format how a specific research problem could be studied. This proposal document should be 7 pages long using an 11pt Arial font, 0.5-inch margins, and 1.0 line spacing. The 7-page limit includes the proposal body text, as well as any figures and tables. The cited references are the only sections that are not counted in the 7-page limit. A typical written proposal has the following structure (the proposal format has been adapted from the standard NIH R21 proposal format):

Specific Aims (1 page): The first page should include the student’s name, title of the proposal, brief rationale for the research, the proposed hypothesis, and the specific aims of the proposed studies.

Research Strategy (6 pages):

Significance and Innovation (1-2 pages): Explanation of the clinical significance of the problem and current understanding, review of the state of the art, and discussion of critical barriers to progress in the field that the proposed project addresses. Explanation of what is novel in the proposed work as compared to currently published literature.

Approach (4-5 pages): This is the core of the proposal, where the student describes the theoretical and/or experimental strategies to be used to accomplish the specific aims of the project, including experiment design, animal models, theoretical analysis, numerical simulation/modeling, as appropriate. This section should include specific hypotheses, the specific aims to test those hypotheses, selection and justification of the animal model used, and detailed experimental design. The student must propose specific measurements, data analyses, including statistical models anticipated, and must explicitly state what results would constitute acceptance and rejection of the hypotheses. Expected outcomes and evaluation of the results should be provided. Potential pitfalls and alternative approaches should be discussed.

Bibliography and References (not included in the 7 page limit): Citation of sources that provide background information and that support the specific aims and the research plan.

Oral Exam: The student will prepare a 45 min oral slide presentation describing his/her research proposal that they wrote in response to the exam question. The presentation may lead to questions (based on the chosen subject areas and sometimes unrelated to the assigned topic and of a broader nature) related to the concepts within the research proposal and the goals of the proposed studies. The duration of the oral exam is not expected to exceed two hours.

Exam Outcome: Immediately after the oral exam the exam committee will deliberate in private and reach a conclusion regarding the exam outcome. The committee may choose to subsequently verbally report the outcome to the student. The exam committee Chair is required to convey the outcome by email to student, and to the Department Chair and the Associate Chair for Research and Graduate Affairs. All students will be notified in writing of the outcome of the exam by the Department Chair or the Associate Chair for Research and Graduate Affairs within one week after the written and oral exam have been completed. This notification may include conditions that the student must fulfill prior to attaining doctoral candidacy or suggestions on certain skills or areas that the student may be required to strengthen as they progress in completing their dissertation research.