

# Qualifying Exam

## Eligibility

To be eligible to take the BME Qualifying Examination (QE), students must have successfully completed all coursework required in the first two years of the BME curriculum. Students may not take the qualifying examination if they are on academic probation or if an incomplete grade remains on their transcript.

## Format

The QE consists of a written and oral component. The candidate must pass both the written and oral portions of the examination in order to pass. The written component will resemble a NIH-style [NRSA](#) grant proposal on any topic chosen by the student, including the student's proposed thesis research. The oral component will consist of a closed 30 minute presentation by the student on the topic of the written proposal. Members of the student's Qualifying Exam Committee (QEC) will ask the student a series of questions on the proposal and related science.

## Timeline and description

Specific dates for the exam may vary slightly from year to year, but the following are general guidelines for stages of the QE. Students are expected to take the qualifying exam by the end of their 8th term of graduate study. Extension of this deadline for any reason will only be considered by written request to the BME Graduate Program. If the student fails to complete the QE by the end of the 12th term of graduate study, they will be recommended for dismissal for failure to progress academically. Students may request permission to take the QE earlier than the schedule below. The request must be made in writing to the BME Graduate Program Director at least two months prior to the proposed exam date. The request must be pre-approved by the student's thesis advisor. A timeline similar to that below should be adhered to.

- Students submit a draft of their thesis proposal to the BME Graduate Program Director that defines the topic for their QE proposal, describes potential questions to be addressed and outlines an experimental plan on their topic. The BME Graduate Program Committee will oversee selection of the student's QEC. Students may suggest names of three faculty members to be part of their QEC (although there is no obligation on the part of the department to choose the suggested individuals for the panel).
- The QEC, responsible for conducting the student's qualifying examination, is appointed by the BME Graduate Program Committee and the student is notified of the names of the panel members.
- The QEC notifies the student in writing of acceptance or of any weaknesses or specific suggestions for improvement to their proposal.
- Student schedules a date for the oral examination in consultation with his/her QEC.
- **at least one week prior to Qualifying Exam** - submit final written proposal to the QEC.
- **at least ten days before the beginning of Fall term** - Qualifying examinations completed.

If scheduling difficulties exist and the exam cannot be completed by the time grades are due (one week after the end of the term) the student will receive an incomplete ("I") grade. Incomplete grades remaining on the student's record after one subsequent term will convert to a no pass ("NP")

# Format of Written Proposal

The proposal shall be written following current general guidelines of a [NRSA](#)-style application. It is the student's responsibility to check on the current guidelines, which are available on the NIH website. The proposal shall be no more than 6 pages (single-spaced), excluding figures and references. Students are encouraged to discuss topics and proposed experiments with all sources (fellow students, post-doctoral fellows, faculty, and visiting scientists). Students may also seek general assistance in scientific writing and proofreading. However, it must be remembered that the written proposal is an examination, and must represent the student's ideas and development of the research topic. Students are expected to adhere to established guidelines for professional ethical conduct in the preparation of their QE proposal topics.

## Role of Dissertation Advisor

To facilitate an objective examination, the student's mentor is not permitted to edit the written proposal. Neither is the mentor permitted to coach the student in a rehearsal of their oral presentation, or serve on the QEC.

## Format of Oral Qualifier Examination

The oral examination will probe the sufficiency of the student's preparedness to conduct the proposed research and also the depth of the student's understanding of his/her research proposal. Students are expected to begin the oral examination by giving a short (30 minute), formal presentation summarizing the written proposal. Audio-visual aids may be used during the summary of the proposal. During the oral examination by the panel, the use of prepared visual aids, textbooks, or other reference material is not permitted. Slides and figures from the oral summary may be referred to if they are the subject of a question from the exam panel. Questions from the QEC should focus primarily on issues pertaining to the proposal; however, the student is responsible for all areas that have been covered during the first two years of graduate course work. Therefore, students also should expect questions on general knowledge in addition to questions relating to the scientific background pertinent to their areas of specialization, as well as more general issues related to the proposed experiments. Students may be asked about the choice of methodologies, their relative advantages and disadvantages, and potential alternative strategies (when appropriate). Students will be expected to understand and be ready to explain the scientific basis of technical methods they intend to employ. The student should be prepared to discuss the rationale for the proposed study, the strengths and limitations of the proposed experimental strategies, and potential pitfalls and alternatives.

## Preparation for the Oral Qualifier Examination

Students should be thoroughly familiar with key historical and background publications that provide the foundation for their proposal, as well as any current literature that directly pertains to their specific aims. In addition, students are encouraged to review the more general scientific areas that provide the conceptual framework for their proposal. Once a student has submitted their final written proposal to their QEC, they may contact panel members for guidance in preparing their oral exam presentation.

## Outcomes

The outcome will be decided by majority vote of the QEC and be recorded on the BME Qualifying Examination form. The form shall be signed by all voting members of the QEC and returned promptly to the BME Graduate Program Director, who will inform students of the outcome immediately after the results are received. Possible outcomes include:

- **Pass** - The student passes both the written and oral examination. In certain circumstances, the QEC may identify specific areas of weakness that the student needs to address during subsequent thesis work. This information will be communicated in writing to the student, thesis advisor, and BME by the chair of the examination panel.
- **Conditional Pass** - A conditional pass may be given for either the written or oral components of the examination if significant deficits are identified. In this case, the student will be provided with specific requirements that must be met within a prescribed time frame. A variety of requirements may be assigned at the discretion of the QEC to correct a perceived deficit, including (but not limited to) additional coursework; revision of some or the entire written proposal; assignment of additional directed reading; preparation of a written review of a particular topic; or presentations in journal club formats. In the case of assigned additional coursework, the student must complete the assigned course(s) with a grade of "B" or better. Within one week of the oral examination, the chair of the QEC will prepare a written statement to the student describing the conditions required to remove the conditional pass.

The chair of the student's QEC will be responsible for notifying the student, the student's thesis advisor, and the BME Graduate Program Director when the student has successfully completed the requirements of the conditional pass. Failure on the part of the student to complete the requirements within the prescribed time frame will be considered unsatisfactory progress, and the student may be subject to dismissal from BME.

- **Fail** - If the student fails either portion of the examination, the student fails the QE. Within one week of the examination, the chair of the QEC will provide a written statement to the student, the thesis advisor and the BME Graduate Program Director, describing the deficiencies that led to failing the qualifying examination. The student may petition the QEC to take the qualifying examination (written and oral) again within the subsequent three months, or alternatively may resign from the graduate program. The QEC may also elect to offer the student the option to complete a Master's Degree, rather than re-taking the Qualifying Examination. In such a case, students will be obligated to complete all the requirements for a Master's Degree in BME. The QEC will counsel the student with respect to the most prudent course of action. If the student decides to re-take the Qualifying Examination, then he/she must submit a revised or new proposal to the QEC as summarized above; and will have five weeks to complete the full proposal.

## Timeline for re-examination

The re-examination procedure should be completed within three months of the original examination, and no later than the end of following academic term.

## Outcome for re-examination

Students will be assigned a "pass," "conditional pass," or "fail" by the same criteria as summarized above. Failure to pass the QE after two attempts will result in recommendation to the School of Medicine for dismissal from the graduate program.

## Qualifying Examination Committee

The Qualifying Examination Committee (QEC - 5 members) is responsible for administering a specific qualifying examination. For each student, the BME Graduate Program Committee will appoint an examination panel of five faculty members and assign one panel member to serve as chair. Three of the panel members may have primary appointments in BME, while the others may have primary appointments outside of the department. School of Medicine graduate faculty members with joint or adjunct appointments with BME may serve as outside members of the panel. Each of the five members of the QEC will participate in the examination

process and vote on the outcome. In addition, a non-voting member representing BME may attend all deliberations and meetings of each QEC. The student's advisor/mentor may NOT be appointed to the panel. The QEC will be responsible for evaluating the written and oral components of the examination, for determining the outcome, and for identifying any requirements that a student must complete in the case of a conditional pass. Each student will have their own QEC, though BME and School of Medicine faculty may serve on multiple panels.

## Advancement to Candidacy

Upon successful completion of the QE, students will become eligible for recommendation for advancement to candidacy. The BME Graduate Program Director will sign the Qualifying Examination form indicating successful completion of all BME requirements for advancement to Ph.D. candidacy.