

# **PBSB ADMISSION TO CANDIDACY EXAM (ACE)**

## **Requirements and Procedures**

**Document version:** 2010-03-17

**Document relevance:** Guidelines in this document expand upon those detailed in the Weill graduate school Code of Legislation Section X.B and the form entitled Regulations for the Admission-to-Candidacy Examination (ACE). Where there is conflict, the guidelines herein should be followed. Tri-I and Linkage students should follow the guidelines of their governing program if they conflict with the PBSB program guidelines.

**Prerequisites:** Prior to taking the ACE, the student must have passed all coursework designated by the student's Faculty Advisors and the Program Director.

**Timing:** Preparation for the ACE should begin before or during the third quarter of year 2. The exam must be completed by the end of the fourth quarter of year 2. Delays need to be approved by the Director.

**Structure:** The ACE consists of a tutorial study program resulting in a written research proposal and an oral component.

- The purpose of the ACE exam is to demonstrate that the student has attained a breadth of knowledge and depth of understanding commensurate with the high standards of the Doctor of Philosophy, and that the student is prepared to undertake full time thesis research. Accordingly, this examination should be a rigorous and meaningful determination of the student's ability to employ and interpret information in an area of specialization and in a more general context.
- The proposal to be defended can either be 'on thesis' or 'thesis related'. On thesis proposals will cover the student's progressing and planned thesis work. Thesis related proposals will present and defend a research plan that is on a subject related to the student's thesis project. The determination of which ACE examination format will be completed is made by the Principal Investigator.
- For 'on thesis' examinations, recognize that although preliminary data is not required, proposals with technical novelty will need to defend feasibility.

**Committee:** The ACE committee, which must be approved by the PBSB Director, will be comprised of 4 examiners: One examiner will be the student's thesis advisor, two others will be selected by the student and PI, and an ACE Committee Chairperson will be selected by the Director. All members of the committee must be WGSMS faculty. The student's thesis advisor cannot serve as Chairperson.

During the written process, committee members are expected to provide some guidance; however, committee members may not write or be directly responsible for any part of the proposal. It is expected that the committee members be available for discussion and feedback

on the proposal details. The committee members are encouraged to provide feedback and critique at the level that they would when writing summaries for R01 reviews.

During the oral process, committee members are free to pose any question commensurate with the aims of the ACE, but are not free to provide answers or direct guidance. The thesis advisor is also free to ask questions. The Chairperson is responsible for ensuring the fairness of the questioning.

**Exam Introduction:** As the first step of the examination, the student should discuss with their advisor the format of the ACE to be followed and the topic to be defended. The student should then formulate a one-page, specific-aims summary of their proposal. The student should then use this aims page as an introduction to their project as they seek to identify committee members. Once the committee is defined, the student should organize a pre-meeting with their committee to formally introduce the project and discuss any amendments to the plan. The purpose of this meeting is largely to determine if the scope of the ACE proposal is appropriate. Once the committee agrees that the aims and plan are well chosen, the student should commence with writing the ACE exam. If a full committee meeting cannot be scheduled in a reasonable time the student should seek similar guidance through individual meetings with each committee member.

**Written exam:** The student should take ~2 months to complete the written portion of the examination. The written research proposal should be no more than 15 pages in length (12 pt font, single-spaced, 1" margins), including figures, but not counting references. The proposal must follow the format of a NIH R01 research grant proposal (note 15 pages are allowed as opposed to the 12 page limit of the NIH):

- 1) Title page (Title, Advisor, Committee)
- 2) Specific Aims - State the problem to be addressed and the specific aims of the proposed research. The importance of the problem at the molecular, cellular and organismal levels should be discussed. If pertinent, it is important to address the possible clinical relevance. (required length: 1 page)
- 3) Research Strategy - Significance: General background, significance in terms of basic science and disease relevance.
- 4) Research Strategy – Innovation: Explain how your proposal differs from what others have tried.
- 5) Research Strategy – Approach: More specific background information. Describe in detail the experimental design and research methods to be used. Technical hurdles to be overcome should be mentioned. Alternative approaches should be given for experiments that may not be feasible. Discussion of expected or possible results and their interpretation. Best format for each specific aim: a) rationale, b) methods, c) expected results, d) alternatives. Theory aims should follow a similar structure where possible.
- 6) References should be comprehensive and cited in full at the end of the entire proposal. Avoid leaning too much on review articles, expect to get questions on primary literature.

The student should consult with the members of the ACE Committee while preparing drafts of the proposal. The student's final draft of the proposal must be submitted to all four committee members. The committee is obligated to read and evaluate the proposal within two weeks. Committee members can approve the proposal as written or request revisions and resubmission. All four committee members must approve the written proposal and sign the "ACE written-exam approval form", which is to be submitted to the Program Director before the oral component can be scheduled. Each member of the committee is encouraged to provide the student with a short written critique of the proposal.

**Oral exam:** The oral component can be scheduled as early as three weeks after the written proposal is approved. The oral component must be scheduled officially with the Graduate School office.

After all members are convened, the student will be excused. During this time, the committee will discuss the student's academic process, the written ACE exam, and any other pertinent issues.

The oral component will then continue with a presentation by the student describing the salient features of the written proposal. The prepared presentation should be 20 to 30 minutes, but it may last longer if the committee chooses to ask extensive questions during the presentation. During and/or after the presentation, the committee will question the student. The committee's questions will likely focus primarily on the significance of the problem addressed, the basic biological principles governing the problem, and the logic of the experimental approach used. Furthermore, the committee will probe the student's knowledge of the relevant scientific areas (thus, any question is "fair game"), thereby ensuring that the student is an appropriate doctoral candidate in PBSB.

When the discussion has concluded, the student will again be excused from the room. The committee will discuss and vote on the exam according to the rules of the Graduate School. The committee will make a written evaluation of the student, which will be forwarded to the Graduate School by the committee chairperson. The committee will convey the assessment to the student before the committee disperses.

**Passed exam:** Handshakes, hugs, kisses ... now get to work!

**Tabled exam:** If, according to the voting rules of the Graduate School, the ACE committee tables the student's ACE exam (i.e., for the written and/or oral components), the student must attempt to correct deficiencies as specified by the committee (remedies may include retaking the ACE exam) within 2 months. Final disposition of the ACE exam must be no later than 3 months from the date of the original ACE exam. Exceptions need to be approved by the Director.

**Failed exam:** If, according to the voting rules of the Graduate School, the ACE committee determines that a student has failed her/his ACE exam (i.e., failure to pass both the written and oral components) an academic review by the Academic Oversight Committee will occur. The

Academic Oversight Committee will consider the student's global academic performance and can recommend that the student be allowed to reattempt the ACE exam or that the student be asked to leave the Program. If the student is allowed to reattempt the ACE exam, the Academic Oversight Committee will set an appropriate timetable.

**Pass for Master of Science Only:** The PBSB ACE rules for "Pass for Master of Science Only" are as defined by the Graduate School. Critically, note that the student must request before the oral examination begins that they would like to be considered for a Master of Science instead of continuing for the Doctorate.