BIOCHEMISTRY AND MOLECULAR BIOLOGY
GUIDELINES AND EXPECTATIONS FOR Ph.D. STUDENTS
(Years 2+)

These rules pertain to all students in the Department of Biochemistry and Molecular Biology (BMB). They are in partnership with the guidelines and requirements set forth by the Program in Molecular and Cellular Biosciences (PMCB), and the Graduate Council of the Oregon Health & Sciences University (OHSU) School of Medicine. All BMB students are responsible for reading this document.

The Ph.D. program is organized as follows:

Year 1:	Complete PMCB requirements
Year 2	Complete the PMCB Qualifying Examination Undertake the research leading to the Ph.D. thesis Complete required and elective courses Attend and participate in Departmental seminars and a journal club
Years 3 +	Create a Research Advisory Committee (RAC) Advance to PhD candidacy Continue research leading to the Ph.D. thesis Attend and present research at Departmental Seminars and a journal club of choice closest to thesis work

REQUIRED BMB GRADUATE COURSES YEAR 2

Fall/Winter/Spring Term

BCMB 605	Journal Club	3 courses
BCMB XXX	Elective credits	1 course
BCMB 607	Departmental Seminar Series	3 courses
CON 665, 667 & 668	Two of these courses must be taken in Year 2 if it was not selected during Year 1 as part of the PMCB required courses	3 credits
BCMB 619	Mol. & Biochem. Basis of Disease	1 credit*
BCMB 601	Research	11 - 14 credits/term

REQUIRED BMB GRADUATE COURSES YEAR 3

Fall/Winter/Spring Term

BCMB 605	Journal Club	3 courses
BCMB XXX	Elective credits	2 courses
BCMB 607	Departmental Seminar Series	3 courses
BCMB 601	Research	11 - 14 credits/term

Summer Terms

BCMB 601	Research	16 credits

*If course not offered substitute one elective course

BMB SPECIFIC COURSE REQUIREMENTS

Students are required to register for, attend and present their thesis work annually in the Departmental Seminar Series, BCMB 607, held Tuesdays at noon as well as attend a Journal Club, BCMB 605 (Years 2 through end of program).

If a student wishes to be excused from taking a required course, the student and advisor should jointly petition the Graduate Curriculum Committee stating their reasons for wishing to be excused from the requirement. The curriculum Committee will decide the issue by a majority vote.

Only course work (required and elective), and not research, journal club or seminar credits, will contribute to the GPA. Students must receive a grade of A or B in the required courses specified in this document. If a student does not receive an A or B, the student must repeat the course the following year. The course can be repeated one time only. Failure to receive an A or B the second time will result in dismissal from the program. The required courses for which this rule applies are CON 650, 661, 662, 663, 664, 665, 667 and 668. The grade of Incomplete is reserved for circumstances in which a student is unable to complete the course requirements the end of the term in which the course is offered due to circumstances beyond their control (i.e. illness) AND it is possible to fulfill the remaining requirements within the subsequent term to earn a grade.

If a graduate student fails a semester of research credits (i.e. receives No Pass (NP) on research), the student is put on immediate academic probation. The student is required to obtain a passing grade on the next term (and subsequent terms) of research credits or the student may be dismissed from the BMB graduate program.

A pre-qualifying graduate student is required to notify and meet with his/her mentor, graduate program director (GPD) and graduate program coordinator (GPC) immediately upon receiving a failing grade on the research credits in any one term. The GPD will suggest a course of action that the student must follow in correcting his/her academic performance.

A post-qualifying graduate student (in consultation with his/her mentor, GPD and GPC) is required to schedule a Research Advisory Committee (RAC) meeting immediately upon receiving a failing grade on his/her research credits in any one term. This RAC meeting must take place within two weeks of receipt of the failing grade on the research credits. The mentor and RAC will suggest a course of action that the student must follow in correcting his/her research programs.

The courses BCMB 605 Journal Club and BCMB 607 Seminar require documentation of attendance in order to be considered for the grade of ‘Pass.’ A total of 3 absences are allowed per term. A graduate student missing more than 3 will receive a grade of ‘No Pass’ and will be placed on immediate academic probation. The student must receive a ‘Pass’ the subsequent term and every term thereafter. Following the receipt of the first ‘No Pass,’ a pre-qualifying exam student must immediately meet with their mentor, GPD and GPC. A plan for insuring the attendance goal for the next term should be designed. Two grades of ‘No Pass’ in either of these activities disqualifies a student from taking their qualifying exams, resulting in dismissal from the BMB graduate program. If a student who has advanced to candidacy receives two grades of ‘No Pass’ in either activity they may be dismissed from the BMB Graduate Program.

Elective Courses: A total of 3 elective courses are required to be eligible for the Biochemistry & Molecular Biology Ph.D. degree. Students are strongly encouraged to start taking at least one elective course no later than winter term of their second year. The following are only a few of the popular electives taken by the graduate students in BMB. Other courses available are listed in the course catalogue and graduate students are encouraged to speak to their mentor and/or GPD when considering taking other courses. Some of the elective courses are offered every other year, relative dates are noted below:

BCMB 620	Biochemical & Biophysical Properties of Membranes	2 credits/Winter Term
BCMB 628	Protein Crystallography	2 credits/Winter Term

BCMB 625	Advanced Molecular Bio. & Nucleic Acid Biochemistry	3 credits/Spring Term
BCMB 618	Protein Design: How Structure is Related to the Function of Proteins	3 credits/Winter Term
BCMB 630	Intro to Biophysics (PSU/OHSU joint course)	3 credits/Winter Term
BCMB 631	Adv Biophysics (PSU/OHSU joint course)	3 credits/Spring Term

PH.D QUALIFYING EXAMINATION

The purpose of the Qualifying examination in BMB is two-fold. First the examination will determine if the student has acquired sufficient knowledge and skills to pursue his or her Ph.D. thesis work. Second, the exam will provide the student with the opportunity to practice the preparation of a research proposal. Before taking the candidacy examination, the student must have completed the BMB course requirements. In the event that a course is not offered before the end of the second year, and the student is otherwise prepared to take the candidacy examination, the examination may proceed without completion of the course and with approval from the Graduate Education Committee. However, the required course must be taken prior to the thesis defense.

Format of the Examination:

Note: BMB guidelines are in accordance with PMCB written guidelines with minor differences that are outlined and bolded.

Oral examination: The oral examination will probe the breadth of the student's knowledge and also the depth of the student's understanding of his/her research proposal. The student is expected to begin the oral examination by giving a short (20-30 minute) formal presentation summarizing the written proposal. Audio-visual aids may be used. Questions from the Qualifying Examination Committee should focus primarily on issues pertaining to the proposal; however, the student is responsible for all areas of cellular and molecular biology that have been covered during the first two years of graduate study. 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. Student should be prepared to discuss the rationale for the proposed study, the strengths and limitations of the proposed experimental strategies and the potential pitfalls and alternative.

Written examination: The qualifying examination will consist of written research proposal prepared by the student within his or her general area of research, but not directly on the student's research project, followed by an oral examination. The proposal should use the general format of the "Research Plan" section of an NIH RO1 (http://grants.nih.gov/grants/funding/phs398/phs398.html). The research plan should have the substance and content, including original thinking, appropriate for such an application. That is, it shall have the following sections:

1. Specific Aims
2. Background and Significance
3. Experimental Design and Methods
4. Literature Cited

The significance, feasibility and the relationship of the proposal to current literature will be important criteria for evaluation. The reference listings must include citations of original papers from the literature. Website addresses may be included as a supplement. The total length of the proposal is limited to 10 single-spaced pages using a 12-point font and/or no more than 15 characters per inch and ½ inch margins. Proposals submitted in an inappropriate format will be returned to the student for reformatting, which will delay the qualifying examination.

Before embarking on preparation of a research proposal, **the student will submit two abstracts** of approximately 300 words each to the Graduate Program Coordinator (GPC). The abstracts should describe specific research problems which have been designed by the student and **which may be related to but not directly on the student's thesis research project**. Abstracts will be reviewed and the Qualifying Examination

Committee (QEC) will select one topic for development. If the QEC deems none of the proposals suitable, the student will present additional proposals in a time frame designated by the QEC

During the preparation of the proposal, the student is encouraged to seek constructive criticism by others, however excluding the thesis advisor. During the oral examination, the student will be expected to make a 20-30 minute presentation of the research proposal, which will be followed by questioning that may cover all areas of biochemistry and molecular biology relating to the proposal.

Defined Categories:
Pass (unconditional)
Pass (conditional)
Fail (Retry)
Fail (Final)

Students who pass the examination conditionally will be required to complete additional work (e.g. rewriting of the proposal, re-examination by the Examination Committee on basic knowledge). The additional work, and date by which it must be completed, will be specified in writing by the chair of the Examination Committee. Upon the recommendation of the Examination Committee, a student who fails the candidacy examination may be given the option of taking a second examination. The second Examination Committee will either pass the student or recommend that the student not be admitted to candidacy for the Ph.D. degree.

Timing of the Examination
Each student is expected to complete the qualifying examination by no later than the end of the summer term (this is not true for a re-examination) of their second year in the program, in compliance with the PMCB requirements.

On or before **July 13** of their second year, students must submit two abstracts to the Graduate Student Coordinator.

July 19: the Graduate Program Director will select a Qualifying Examination Committee (QEC) responsible for conducting the student's qualifying examination. A chair of the QEC will be designated. The student is notified of the names of the panel members.

July 26: The QEC notifies the student in writing of selection of the examination topic and the acceptance or of any weaknesses or specific suggests for improvement to their proposal.

August 6: students must have their examination dates scheduled. Examinations must be completed at least ten days before the beginning of the Fall term.

Students submit their final written proposal to the QEC and their thesis advisor at least one week prior to the Examination date. Students must submit a letter to the QEC from their thesis advisor describing the advisor's role during preparation of the proposal (see "Role of Thesis Advisor and Other Faculty" in the PMCB guidelines).

A student who is asked to repeat the candidacy examination will be expected to do so within 3 months of the initial examination.

Examination committee
The Graduate Program Director will appoint a 5-member examination committee for each student based on the topic to be presented by the student and, as they see fit, the nominations of the student involved. **Names of the examiners nominated by the student should be submitted to the Graduate Program Director together**

with the abstracts of his or her proposals. *The student's thesis advisor may not serve on the examining committee*, but may attend the examination as an observer.

RESEARCH ADVISORY COMMITTEE

Purpose: The purpose of the Research Advisory Committee (RAC) is to advise and oversee the progress of the student's entire graduate education and training. The Committee should be composed of two or more primary faculty members of the Department of Biochemistry and Molecular Biology, and faculty members with primary appointments outside of BMB with appropriate research expertise, to total four members. *The Chairperson of the committee cannot be the Student's Research Advisor (mentor).* If the focus of the student's research changes, then appropriate changes of personnel in the RAC can be made. The RAC should advise the student in matters of curriculum requirements and research objectives. The RAC will determine whether the required coursework has been taken and may recommend additional coursework pertinent to the specific research goals. Members of this committee may also serve subsequently on the Thesis Examination Committee. In this way, these faculty members will be familiar with research, and will have the opportunity to communicate possible concerns they may have bout your work early to allow time to address these concerns. RAC meetings usually involve an oral presentation by the student of thesis research goals and progress.

Forming the Committee: Immediately following passing the qualifying exam, students in consultation with their mentor should construct a Research Advisory Committee. Students must meet with their RAC within 6 months of passing the Qualifying Examination and every 6 months following the first meeting. *It is the responsibility of the student to organize and schedule these meetings*

The First Meeting: Students are encouraged to form their RAC as early as possible, but the first formal meeting must be held by the end of Winter Term in the student's third year. At least one week prior to the first meeting, the student will be expected to send the Committee Members an updated half-page description of his/her immediate research goals, a copy should also be sent to the Graduate Program Coordinator (GPC) along with a list of the RAC members and the RAC meeting date. At the first meeting, the student will present a 5-minute introduction to the research problem and one member of the committee will be selected to serve as chair of the committee. *It is the responsibility of the student to schedule this meeting.*

Subsequent Meetings: The RAC will meet every 6 months, or more frequently if deemed necessary. The student will update the committee on the progress made toward the research objectives and the completion of required course work. At least one week prior to the meeting, the student will be expected to send the RAC members and the GPC an updated summary that should be no more than three pages. The meeting will begin with the student giving a 15-minute overview of his/her more recent results and future directions. Following each committee meeting, the chair should prepare a brief memo evaluating the student's progress and send it to the GPC.

Final Meeting: Three to four months prior to anticipated thesis defenses the student would have a RAC meeting to obtain approval for the beginning of thesis writing.

Advancement to PhD Candidacy: Students will advance to PhD candidacy once they have passed their qualifying examination *and* have formed their RAC.

Stipends: Students in BMB receive a monthly stipend for living expenses. Students will receive an increase in their stipend payment only after they have passed their qualifying exam, formed their RAC and submitted the Adv. to Candidacy form to the GPC. The increase will begin the month following submission of the form.

Non-compliance: Non-compliance can and will result in the revocation of certain Departmental privileges (e.g. Student's Departmental e-mail account), academic probation and possible dismissal from the graduate program.

BMB Preparation and Submission of Thesis: All instructions and guidelines adopted by the Graduate Council By-Laws shall be carefully followed.