Graduate Program Handbook

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1. PROGRAM AUTHORITY

1.1 Graduate School

The UW-Madison Graduate School is the ultimate authority for granting MS and PhD degrees at the University. The doctor of philosophy is the highest degree conferred at UW-Madison. It is never conferred solely as a result of any prescribed period of study, no matter how faithfully pursued. Rather, a PhD is a research degree and is granted on evidence of distinctive attainment in a specific field and on ability for independent investigation as demonstrated by a dissertation presenting original research or creative scholarship with a high degree of literary skill. The Departments of Biochemistry and Biomolecular Chemistry administer a Graduate Degree Program under the authority of the Graduate School. If completed successfully, the Program's minimum requirements meet all Graduate School requirements for conferring a PhD (or MS) degree. The Program is designed to prepare students for outstanding, professional careers in research, teaching, and science communication.

1.2 Departments

Program authority to set degree requirements beyond the minimum required by the Graduate School lies with the Biochemistry and Biomolecular Chemistry faculty. The policies described in this handbook have been approved by the Program faculty as a whole, and are subject to periodic review and update. Day-to-day Program administration is delegated by Program faculty to the Steering Committee, whose membership is appointed by the Dept Chairs. The Steering Committee, aided by Program staff and related faculty committees (New Student Orientation Committee (NSOC), Student-Faculty Liaison Committee (SFLC), Examinations & Certification Committee (ECC), Admissions Committee, provides guidance to students and faculty with regard to Graduate School and Program requirements, and arbitrates any requests for exceptions to Program requirements.

(See Appendix 9.B for a complete list of committee compositions and responsibilities.)

2. ADMISSION TO THE PROGRAM

Student admission into IPiB is contingent on meeting requirements set forth by the Graduate School and by the Program.

2.1 Graduate School Admission Requirements

The Graduate School web site (http://www.wisc.edu/grad/) details minimum University admission standards, including expected degree achievement from an accredited institution, GPA, standardized test results, and English language proficiency.

2.2 Program Admission Requirements

2.2.1 For admission to graduate study in IPiB, a student must complete a BS or BA degree in a recognized, accredited college or university.
2.2.2 An applicant should have a minimum grade average of B or better in order to be considered for admission.

2.2.3 Candidates should have an undergraduate degree in biochemistry, chemistry, physics, or one of the biological or medical sciences. A minimum GPA of 3.0 (on a 4.0 scale) is required. In addition to meeting the general requirements of the UW-Madison Graduate School, course work in biology, chemistry, biochemistry, genetics, physics, organic chemistry, and physical chemistry is required. However, course deficiencies are made up during the first 2 years of your graduate studies.

2.2.4 There are no specific admission course requirements in other supporting fields, but students are encouraged to acquire an adequate background in mathematics, physics, biology, and genetics, ideally obtained by advanced courses taken during the undergraduate years.

2.2.5 Undergraduate research experience is strongly recommended.

2.3 Admission Timeline

The Program application deadline is December 15. Students are selected between January and March for admission the following September.

3. PHD REQUIREMENTS FOR A MAJOR IN IPiB

The primary requirement for achieving a PhD in IPiB is the completion of a noteworthy intellectual contribution to biochemical research. PhD candidates are expected to do significant, original research during their degree tenure and to write a thesis based on this research. The thesis must represent a substantial effort from both the experimental and literary points of view. The purpose of all other Program requirements listed below is to ensure a student has strong, broad-based background knowledge of general biochemistry so they may perform effectively and proficiently in all applications of the science, and to assess the level of student achievements with regard to Program and professional standards.

3.1 Program Course Requirements

3.1.1 Rectifying Admission Deficiencies. Any deficiencies identified by the ECC in the background course work will be detailed in writing to the student (2.2.3, above), and must be made up during the first 2 years of graduate study.

3.1.2 Required Courses. All students must complete the following course series. (See 4.2 for typical timeline.)
- Biochem 660: Biochemical Techniques (2 credits)
- Biochem /BMC 701: Professional Development in Biochemistry (1 credit)
- Biochem/BMC 710: Exploring Biochemical Function of Macromolecules (2 credits)
- Biochem/BMC: Advanced Seminar (see 3.3 below)

3.1.3 Physical and Biological Course Requirements. Students must complete a minimum of
2 additional graduate level (600 or above) didactic or laboratory courses at UW-Madison. Each course must carry 2 or more credits, and total a minimum of 6 credits. At least one of these courses must be in the Physical Sciences area, and another must be in the Biological Sciences area.

(See Appendix 9.C for a list of approved courses that satisfy these breadth requirements).

If a student wants to meet the Physical or Biological Course Requirement by substituting another UW course not on these lists, s/he must provide a course syllabus and a written description that specifically justifies how the requested substitute meets the intent of the particular Program course requirement. For example, the intent of the Physical Science Course Requirement is to familiarize students with the physical side of biochemistry. Just because a course is offered by the Chemistry Dept does not guarantee it will meet this intent. A student's advisor must indicate approval of the substitution request by adding his/her signature to the petition. The request will then be considered by the ECC. Approval by the ECC should be requested prior to enrollment in the substitute course.

3.1.4 Additional Course Work. At the discretion of a student's advisor, his/her graduate committee, or the ECC, additional remedial or advanced course work may be recommended to enhance a student's professional training.

3.2 Graduate School Minor Requirements

The Graduate School specifies that a PhD Program must be rationally unified, with courses that contribute to an organized plan of study and research. Most courses are selected from a single group embracing a principal subject of concentration, called the "major" (in this case, Biochemistry) and additional courses are selected from one or more related fields, called the "minor", to provide educational breadth. The Program course requirements for a major in Biochemistry are outlined above (see 3.1). The Graduate School minor course requirements may be satisfied by Minor Option A or Minor Option B. An average GPA of 3.00 on all minor coursework is required.

3.2.1 Minor Option A (focused): requires a minimum of 10 credits in a single department or field of study. With the advice of a "minor professor", the student chooses courses from the offerings of a particular UW department (e.g., Chemistry, Microbiology, Genetics, Physiology, etc.). The specific requirements, course work and grades to be met are prescribed by the chosen department.

3.2.2 Minor Option B (distributed): requires a minimum of 10 credits in one or more departments and can include course work in the major department.

As a matter of course, many IPiB students select Minor Option B to fulfill the Graduate School minor requirements because the Program allows (nearly) all course work credits taken for the major (see 3.1) to count towards the Option B minor in addition to counting towards the major requirements. In other words, Biochem 660 (2 cr), Biochem/BMC 701 (1cr), Biochem/BMC 710 (2 cr), the Physical Sciences
Requirement (2+ cr), and the Biological Sciences Requirement (2+cr) may be combined to provide all 10 credits for an Option B minor.

3.2.3 **UW Course Work not applicable to the Minor.** The Graduate School stipulates the 10 credit minimum for Option A or B minor requirements can only be fulfilled by advanced (300 level or above) didactic or laboratory courses. Seminar courses (e.g. Biochem 901-945) and research study (e.g. 990, credits are not applicable toward minor requirements.

3.2.4 **Non-UW Course Work.** With the approval of the ECC and the Graduate School, students may receive graduate-level transfer credits, applicable toward a Biochemistry major or Option B minor, for courses taken at another institution. For courses you believe are equivalent to our basic courses, contact the professor in charge of each specific course to request credit in that course. Then make a credit transfer/substitution request in writing to Flavia Arana, to be forwarded to the ECC. This credit/transfer substitution request must be signed by the professor in charge of the equivalent course. For courses that are not equivalent to any of our basic courses, you must submit a syllabus of the course in question and explanation of why you think it satisfies a particular requirement, directly to Flavia Arana to be forwarded to the ECC. A student's major professor must indicate approval of the credit transfer request by adding his/her signature to the petition. The maximal credit toward the major or minor (Option A or B) that will be given for courses taken elsewhere is 8 semester credits.

3.2.5 **Certification of the Minor.** To ensure chosen minor course work meets the requirements of the Graduate School, a student must file a proposal for their minor program with the Program office before his/her preliminary examination can be scheduled. The First Committee Meeting Evaluation Form is available in the Program office. Usually, the proposed course work is discussed and this form is completed during a student's First Review Meeting (see 3.8.1). To certify a Minor Option A, the Form must include the signatures of the major professor and a representative of the minor department (minor professor). For Minor Option B, the form must receive approval from the major professor and one of the ECC Co-Chairs.

3.3 **Seminar Requirements**

3.3.1 **Continuous Seminar Enrollment.** After completing one semester of graduate work, students must register for an advanced Biochemistry, Biomolecular Chemistry or other approved seminar course each fall and spring semester of each academic year. Letter grades (A-F) are assigned in semesters when students present a seminar, and grades of S or U are assigned in semesters when students attend, but do not give a seminar.

3.3.2 **Required Seminar Presentations.** During their graduate careers, students are required to present a minimum of 3 seminars in advanced seminar courses (see 3.3.1) and receive a grade of B or better in each seminar.
• One literature seminar will be in the general area of the student’s research interests.

This seminar will be given in an advanced seminar course that is related to the student’s research area.

• One literature seminar will be in an area outside their specific research interests.

This literature seminar should be given in an advanced seminar course that is unrelated to the student’s research area. The goal of this seminar is to develop a broader base of knowledge, and to become familiar with different scientific approaches.

A good rule of thumb is to choose a seminar topic that you do not need to know to perform your own research project well. In addition, you should be accessing journals of general significance that you may not necessarily read regularly for your own research.

• One seminar will be presented on their research progress in the interdepartmental graduate seminar (currently BMC 901/Biochem 729). This will generally occur in the fourth or fifth year of graduate study. Students will be required to enroll for two semesters in this seminar series, even though they will be expected to present a seminar only once.

The research seminar should cover background literature relevant to the student’s research, research progress to date, and future research plans. In terms of seminar format, about half of the seminar (20-25 minutes) should be devoted to background, such as literature relevant to the student’s research, past research in the lab relating to the student’s project, etc; the next 20-25 minutes should describe the student’s research progress (experiments, data, techniques, etc), and about 5 minutes should be devoted to future research directions/plans. As usual, the student should allow 10 minutes at the end of the seminar for audience questions.

(See Appendix 9.D for more information about how to present and organize your seminar.)

3.3.3 Seminar Waiver. A student may petition the ECC to substitute enrollment in an equivalent UW advanced seminar course in lieu of those offered by the Departments of Biochemistry and Biomolecular Chemistry (not to include the IPiB seminar) if participation in that course seems especially appropriate to his/her course of study.

3.3.4 Biochemistry 799, Practicum in Teaching. In lieu of one required seminar presentation (3.3.2), students may, with the instructor's consent, enroll in Biochemistry 799 (1 cr). This course provides an opportunity to plan and deliver a graduate level instructional lecture in Biochem 660. One semester credit of 799 fulfills the equivalent of one
required advanced seminar presentation, excluding the outside seminar presentation and the research progress seminar (3.3.2). If a student participates in 660 more than one time, the additional semesters of participation can fulfill the requirement for Continuous Seminar Enrollment (3.3.1), but additional semesters of 799/660 do NOT satisfy the requirement for additional advanced seminar presentations (3.3.2).

### 3.4 Course Load

#### 3.4.1 Graduate School Minimum Credit Requirement

For a PhD, the Graduate School requires completion of at least 32 graduate-level credits (16 credits for the MS degree) taken at UW-Madison. Transfer credits from another institution do not count toward this requirement. Students (RAs with >33% appointments) should register for 12 credits each semester and 2 credits during the general 8-week summer session until this Graduate School credit requirement is met. Typically, this necessitates the equivalent of 4 semesters of research and course work. This requirement cannot be satisfied by summer sessions or part-time attendance only. Acceptable work includes all Program course work (see 3.1 above), research credits (990), seminar credits (see 3.3 above), and course work for the minor (see 3.2 above).

#### 3.4.2 Course Load for Non-Dissertators

IPiB recommends incoming students to register continuously for 12 credits (full load) of graduate-level courses each semester and 2 credits in the 8-week summer session until all major and minor course credit requirements are met. [Note, however, that students who are Trainees or Fellows may need to register for more than 2 credits, depending on the terms of their traineeship or fellowship.] All credits must be in science courses (with a possible exception for international students who require English courses) and may include any didactic courses related to IPiB, as well as 990 (research), seminars, and courses taken for the minor.

#### 3.4.3 Dissertator Status

Dissertator Status should be achieved by the end of the 4th semester if:

- The student has registered for at least 12 credits/semester and 2 credits each summer (32 credits minimum)
- The student has completed all required course work including the minor, but excluding seminar enrollment/presentations.
- The student has successfully passed the preliminary examination.
- The Program teaching requirement does not need to be completed in order to achieve Dissertator status.

#### 3.4.4 Course Load for Dissertators

Students who have passed the preliminary examination (3.8.2), completed all course work for the major and minor except the Program seminar and teaching requirements (see 3.3, & 3.6), met the Graduate School minimum credit requirement (32 credits), and filed a signed preliminary warrant (3.8.3), are eligible for "dissertator status," which allows him/her to register for a reduced number of credits (3 each semester/summer) until completion of the degree. Dissertators should register for 2 credits of research (990) and 1 credit of advanced seminar, each fall and spring semester, and 3 credits of research each summer session. Dissertators exceeding 3 credits per session will lose dissertator status, and they will be assessed segregated fees at the non-dissertator rate.
3.4.5 Continuous Registration. Graduate School policy requires dissertators to register continuously each semester and summer until the thesis is filed with the Graduate School. Once you have filed your preliminary warrant, you must be continuously registered as a dissertator through the day you file your PhD thesis with the Graduate School. For this purpose, registration in a given academic term extends up to the first day of classes of the following term. If you delay filing your thesis until the first day of classes (or after) of a given academic term, you must register for that term. Those who fail to maintain continuous registration are subject to a penalty of 12 times the current per credit fee (dissertator rate), and are personally responsible for payment of this penalty.

3.5 Grades

3.5.1 Cumulative GPA. The Graduate School requires all MS or PhD students to achieve a cumulative grade point average (GPA) of 3.0 (B) or better in all lecture and laboratory courses taken in the UW-Madison. If a course is repeated because of an unsatisfactory grade, both grades are included in the cumulative GPA. Grades in research, advanced conference and advanced seminars are not included in this average.

3.5.2 Minimum Grades for Major. The minimal acceptable grade in any biochemistry, biomolecular chemistry, or other approved course applied towards IPiB Course Requirements (3.1, above) is a BC. Any grade of C or lower requires repeating the required course, with a grade of BC or better.

3.5.3 Satisfactory Progress. Success in the PhD program is determined by adequate progress in both coursework and research. Your coursework is determined by program requirements as well as by your guiding committee. In many instances, your committee will suggest additional courses that aim to help you in your research work. Satisfactory progress in the lab is determined by your major professor. This includes but is not limited to working regular hours in the lab as set by your major professor, participating in lab related activities, and keeping laboratory notebooks. If a student is not making satisfactory progress, the advisor will consult with the student’s committee and the student may be dismissed from the program.

3.5.4 Grade Synopsis. PhD level course work requirements for the major and minor are aimed at preparing a student for a career-long profession of advanced study and are not intended to be remedial. A student cannot be "certified for the PhD" (see: 3.8.2) until all required course work is completed with graded achievements that meet or exceed the minimum standards for the major, the minor, and the Graduate School cumulative GPA.

3.6 Teaching

3.6.1 Program candidates for the PhD degree must participate in 2 semesters of teaching as part of their training. Teaching consists of assisting in an assigned Dept laboratory or lecture course. This is usually done in the second and third years of graduate school.
3.6.2 Students with prior teaching experience while enrolled in another graduate program can apply to the Graduate Teaching Assignment Committee for waiver of the teaching requirement.

(See Appendix 9.E for a copy of the Graduate Teaching Assignments letter.)

3.7 Major Professor and Graduate Committee

3.7.1 Major Professor: Every graduate student must have a faculty advisor (major professor) who is on the IPiB faculty. The major professor advises the student about course work, supervises the student's research, and acts as a channel of communication within the department, to other departments, and to the Graduate School. The major professor must approve the student's coursework and research direction before registration and must also approve any subsequent changes to it.

3.7.2 Graduate Committee. A graduate committee is composed of at least 5 current graduate UW-Madison faculty members, including the major professor. The committee is empowered by the Program to advise the student about certification, administer the preliminary examination, oversee yearly progress reports, approve thesis composition, and conduct the final PhD examination.

Before the third semester of graduate study, the student, in consultation with their major professor, should select four members of the UW-Madison faculty to serve on the student's graduate committee. The Graduate School requires at least one of these members to be from outside the Departments, and the IPiB Program permits no more than two members to be from outside the Departments. Students choosing Minor Option A, typically include the minor professor among their selected faculty. It is the student's responsibility to seek and obtain (verbal) approval from their four selected faculty to serve on this committee. The ECC will designate which committee member from the Program shall serve as Chair for the preliminary exam. All other committee meetings are usually chaired by the major professor. Committee composition must be approved by the ECC prior to a student's First Review Meeting (see 3.8.1).

3.7.3 Committee Changes. Typically, a graduate committee is appointed for the duration of a student's degree Program. Temporary or permanent committee changes will be considered by the ECC, if a written request, signed by the major professor and the student, is submitted to the Program office (i.e. Flavia Arana). Any requested changes to the committee makeup require prior (verbal) approval from the substitute member.

Challenge to the Student. No one has more at stake in a graduate Program than the student. To obtain a quality education, the student must play an active role in choosing a concerned, knowledgeable committee, scheduling the meetings, informing the membership, and designing a challenging, high quality learning
Challenge to the Graduate Committee. The graduate committee is responsible for ensuring that the student's formal education has the proper breadth and foundation. Beyond this, the committee should aid in the development of an outstanding, rigorous plan of advanced study, including providing guidance for seminal research in an area of scientific importance. The members should be knowledgeable about courses and other educational opportunities so they may play an active, thoughtful role in the development and evaluation of a student's education. They should be available for consultation outside of scheduled meeting times, and responsive to the scheduling of required student meetings.

3.8 Examination and Review Procedures

3.8.1 First Review Meeting. The graduate committee must be convened prior to the beginning of the second year to evaluate the student’s performance in course work and discuss his/her research project. The major professor and at least 2 of the 4 committee members must be present. In the event a faculty member should miss this meeting, the student must contact him/her within one week, for an individual reprise of the meeting content, and to obtain the requisite signatures. The goal of the first meeting is to introduce your research area and outline your goals. Your second meeting, the upcoming prelim, is the proper forum to discuss the route to your goals. One week before the first meeting, prepare a brief outline of your proposed research directions and distribute it to your committee. The meeting is typically informal, but it provides an excellent opportunity for the committee to learn about you and how they might contribute to your career. An outcome of the meeting should be a completed First Committee Meeting Evaluation Form (3.2.5) signed by all 5 faculty.

(See Appendix 9.F for a copy of the First Committee Meeting Evaluation Form.)

3.8.2 Year 2 Preliminary Examination:

Exam Expectations. Preliminary or qualifying examinations are a standard feature of PhD Programs. The process serves to evaluate whether a student meets the expected professional standards for educational acumen, scientific background, aptitude for research, and literary competency. The process focuses attention on a candidate's proposed research and provides a realistic appraisal on the likelihood of Program completion.

Exam Timing. IPiB students are expected to complete the preliminary exam process before the end of their 4th semester in residence. (See 4. "Guidelines" for prelim scheduling procedures.) Exceptions to the typical exam schedule require ECC approval.

Written Proposal. The student must prepare a written research proposal and present it to his/her graduate committee for evaluation. The completed proposal must be distributed to the Graduate Committee no less than two weeks before the
date of the exam. The student may consult with his/her major professor in planning the proposed research, and have limited consultation with the major professor during proposal writing. However, the major professor should not proofread the proposal. The proposal is to be prepared in a format similar to that for proposals to the NIH. The maximum length is 20 pages of double-spaced text (12 pt. font), excluding title page, figures, and references. A good proposal could be shorter.

A copy of the proposal must be filed with the Program office when distributed to the committee, and becomes part of the student's permanent record. The committee will have the option to postpone the oral exam if the written research proposal has significant deficiencies.

**Title:** Should be short and informative.

**Summary:** In one page, define the problem and objectives (Specific Aims) of the proposed research. Include a brief description of the experimental approach and indicate why the expected results should represent a significant advance in the field.

**Background:** The current knowledge in the area should be reviewed within the context of the research problem that will be defined. The student should convey how the research proposal represents a logical and important extension of current knowledge. This section should demonstrate familiarity with, and critical analysis of, the literature in the area. Confine the literature citations to those which are crucial, i.e., those that the committee really ought to read to be informed. Confine this section to 2-4 pages. The experimental proposal should flow naturally from the final paragraph of this section.

**Proposed Research:** One might begin this section by restating the Specific Aims and how they relate to the questions which the proposal addresses. Subsequently describe how you propose to approach each specific aim. Explain the objective and rationale of the designed experiment, the results you expect from the experiment, and how the results will be interpreted. Include here (or in a separate section before the Proposed Research) any preliminary data or results of feasibility studies. Be as specific as possible about how you will do an experiment, but realize that details can be elaborated upon during the oral exam. Discuss the problems inherent to the experimental approach, and alternate approaches you might try if one approach fails. From the results you anticipate, what new experiments will follow? Indicate what specific aims are dependent upon successful resolution of earlier objectives, and which are independent. Indicate the priority you think should be devoted to each objective. This should be the major section of the proposal, perhaps 6-8 pages.

**Possible Extensions and Importance** (Optional): In one or two paragraphs, you may wish to indicate new approaches or important extensions that might stem from the proposed research. You might, for example, discuss the more speculative ramifications of the research or suggest grandiose experiments that
might be possible after you accomplish your limited (time-restrained) objectives as a graduate student.

Priorities / Timeline: You should make clear in what order you plan to pursue the proposed experiments and how long you expect each stage of the research to take.

**Oral Prelim Examination**

At the beginning of the oral examination, the committee Chair (as designated by the Examinations and Certification Committee) reiterates faculty and student procedures, distributes evaluation forms, and ensures that members from outside the Integrated Program in Biochemistry (IPiB) are fairly apprised of Program expectations. The candidate then gives a 20-minute, **uninterrupted** oral presentation of the research proposal to the committee. S/he then responds to committee questions. The major professor does not participate in the question period, except as requested by other committee members, and then only to provide brief points of clarification. The oral examination phase cannot exceed two hours.

The candidate should not attempt to cover every detail of the proposal (that would be difficult to do in 20 minutes and would be redundant since the members of the Thesis Committee will have read and thought about the proposal). Rather, s/he summarizes the most significant and interesting features of the proposal; the presentation should be designed to generate enthusiasm for the project.

The written proposal and oral presentation serve as a starting point for further discussion. The aim of the discussion is to explore not only in-depth knowledge of the specific proposal topic, but also broader knowledge of biochemistry. Examination questions that deal with breadth of knowledge in biochemistry can be drawn from IPiB course work, and might include discussion of experimental evidence and the practice and theory of techniques.

After the exam is completed, the candidate is excused. The committee completes an evaluation form addressing criteria (A-H) listed below, and takes a non-binding, preliminary vote on whether the candidate should pass, conditional pass, or fail. Thereafter, the committee discusses the candidate’s exam in depth, and recommends one of the following:

1) Pass
2) Conditional Pass
3) Fail

The committee also provides an overall written evaluation of the exam summarizing the student’s strengths as well as areas for improvement. If the committee recommends a conditional pass or failure, the committee must summarize the reasons for this recommendation. The written evaluations are compiled by the committee chair, with input from committee members, prior to adjournment of the meeting.
Criteria:
A. Quality of the written proposal
B. Quality of the oral presentation
C. Ability to answer questions
D. Knowledge of background material
E. Quality and quantity of work accomplished so far
F. Experimental design
G. Defense of research plan
H. Feasibility (Can the proposed work be finished in a reasonable time frame?)

Candidates who fail their exam have until the end of June of the following year to repeat the exam in its entirety. If a candidate fails the prelim twice, s/he cannot continue in the IPiB PhD Program.

Candidates who receive a ‘conditional pass’ will be given specific goals that must be met and a timeline by which those goals must be met. The candidate's progress will be reviewed at the next yearly meeting. At any time, failure to achieve satisfactory progress may lead to dismissal from the program.

The evaluation is discussed by the candidate and advisor and then placed in the candidate’s file.

3.8.3 Prelim Warrant. As part of the preliminary exam procedure, Program staff will ask the Graduate School to issue a "preliminary warrant." After a successful examination, a student's graduate committee signs this warrant, and the committee Chair returns it to the Program office where it is kept until the student has completed all required course work, including the Graduate School minimum credit requirement. In lieu of a minor professor, the Department Chair of the student’s major advisor signs the warrant for a distributed minor. Only after the warrant is completed and filed with the Graduate School, is a student "certified for the PhD" and eligible for registration as a dissertator.

In IPiB, the Advanced Seminar Requirement (3.3) and the Teaching Requirement (3.6) do not need to be completed before filing the preliminary warrant with the Graduate School. However, students are advised to make diligent progress towards these requirements as quickly as possible. A student may not submit a "Request for PhD Examination Form" (3.8.6) until the teaching requirement is complete and all seminars (or definitive plan for completion of the required seminars) have received ECC approval.

3.8.4 Yearly Review Procedures. Every year following the prelim, students are required to give a report on their research progress and future plans to their graduate committees. The meetings must be scheduled no later than May 31 of each academic year. Regular meetings held early in the year are encouraged to avoid exceeding this deadline and to minimize faculty scheduling conflicts. A 2-3 page summary of aims accomplished and future plans should be distributed to the committee no less than 2 days before the meeting, then after a brief oral presentation, the student and committee (the major advisor and at least two committee members must be present) discuss the progress made, future plans, and complete an evaluation form summarizing the progress to date and future plans. The evaluation form is returned to the Program Office and becomes part of the student's file.
3.8.5 Thesis. Students are expected to carry out significant, original research during the entire period of their PhD training and to write a thesis based on this research. The thesis must be formatted according to the guidelines of the Graduate School, present evidence of a substantial experimental effort by the student, and reflect a strong intellectual contribution that meets all standards set by the student's graduate committee. If the work is the result of collaborative enterprises, the writing must clearly define those portions representing the student's own contribution. The thesis must also include a substantive review of literature relevant to the project. It should be written with a high level of literary skill, such as would be found in leading journals in that research area.

The Graduate School website hosts A Guide to Preparing Your Doctoral Dissertation which will help you prepare your final thesis: [http://www.grad.wisc.edu/education/completedegree/pguide.html](http://www.grad.wisc.edu/education/completedegree/pguide.html)

The thesis must be completed and distributed to the members of a student's graduate committee not less than two weeks before the date of the final oral examination.

Publication of a PhD thesis is required, since it constitutes a permanent record of research and literary achievement. After successful completion of the final exam, an unbound, fully corrected, and complete copy must be deposited with the Graduate School. The UW uses Proquest Information Learning for microfilming and binding. Students must pay the cost of microfilming and binding. They are also responsible for knowing and meeting all thesis filing deadlines for degree completion.

The Graduate School web site provides clear instructions for these procedures in The Three D’s: Deadlines, Defending, & Depositing Your Ph.D. Dissertation at [http://www.grad.wisc.edu/education/completedegree/ddd.html](http://www.grad.wisc.edu/education/completedegree/ddd.html)

3.8.6 PhD Warrant. Two months prior to an anticipated final oral exam date, the student must contact the Program office and file a "Request for PhD Examination Form." This process initiates Graduate School and ECC activities that certify the graduate committee membership prelim and course requirement completion, and results in the issue of a formal "PhD Warrant" to be signed upon successful conclusion of the final exam. Program staff will work with the student to finalize the defense date and reserve appropriate rooms. They will also help distribute announcements about the oral presentation and remind graduate committee members of their responsibilities. Students, who do not initiate warrant requests 2 months ahead of time may face postponement of their anticipated defense.

3.8.7 Final Oral Exam. The final oral examination deals primarily with the thesis content. A student takes the final exam only after all other degree requirements have been satisfied, including clearing his/her academic record of incomplete grades and progress grades (other than research credits).

Within IPiB, students traditionally begin their oral exam with a public seminar.
summarizing their research accomplishments and highlighting the significance to the field. The seminar is not graded. Afterwards, the student meets with his/her graduate committee and responds to questions. The major professor can take part in the questioning, but should not actively steer the discussion or defend the research. The oral examination usually lasts up to 2 hrs, or until the committee is satisfied with their individual evaluations. The student is then excused, and after deliberation, the members decide whether or not to endorse the degree completion by signing the PhD Warrant.

To pass the final examination, a student must receive no more than one dissenting vote from the graduate committee. A missing signature on the Warrant is considered a dissent. At the discretion of the student's graduate committee, a student may repeat a failed final exam (once), be dropped from the Program, or leave the Program with an MS degree.

3.9 Progress Towards Degree

3.9.1 The Purpose of Yearly Meetings is to provide guidance and encouragement so the student can complete their PhD research in a timely manner. If at any point the graduate committee believes sufficient progress is not being made, or is unlikely to be made, they may recommend dismissal from the Program. (See Appendix 9.G for a copy of the Yearly Progress Meeting Form)

3.9.2 Graduate School 5 Year Rule. Students have five years from the date of passing their preliminary exam to successfully complete a final oral examination and deposit their thesis with the Graduate School. Students who fail to meet this deadline are required by the Graduate School to take another preliminary exam and be admitted to candidacy for a second time.

3.9.3 Other Employment. Any IPiB student who engages in any form of employment (including part-time or on evenings/weekends), in addition to their graduate studies, must report that employment to their major professor. Failure to report outside employment could result in dismissal from the Program.

4. GUIDELINES FOR NEW PHD STUDENTS

4.1 Laboratory Rotations and Choosing a Major Professor

Lab rotations are aimed at finding optimal matches between incoming students' research interests and Program faculty who shares those interests. The NSOC facilitates the process of pairing students with (potential) major professors and ensures the pairing mechanism is fair and works to everyone's best advantage. Students meet with the NSOC shortly after they arrive and are guided through the rotation procedures (outlined below).

Students who are pre-assigned to major professors should report to Program staff when they arrive on campus. These "direct admit" students don't rotate, but they must still participate in all Program orientation events.

IPiB faculty will have the opportunity to meet incoming students and describe their research programs in a series of 15-20 minute "short talks" during the first week of orientation. Program
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staff will contact faculty who have indicated space or funding for new students to schedule these presentations. All new students are required to attend the short-talks. Certainly, students should take time during this week to schedule additional meetings with individual faculty. Personal discussions about research opportunities, space, and funding are highly encouraged before a student submits his/her first rotation choices (at the end of this first week). Sample questions one might ask of a potential advisor are listed in Appendix 9.H.

4.1.1 Rotations. The 1st semester of a new student's Program is divided into 3 rotation periods of (about) 1 month each. During each rotation, the student reports to an assigned lab and participates as a member of that research unit. Occasionally the NSOC also permits a 4th rotation (Dec-Jan), if required for a favorable pairing. However, three rotations are generally sufficient (see 4.1.3), and provide a quick launch to every student's research career, which is a major aim of the process.

4.1.2 Rotation Assignments. Each year, the NSOC compiles a current list of Program faculty who have lab space and funding for new students. The list is distributed during Program orientation. New students are then asked for an initial list of 3-4 faculty with whom they might like to rotate. The NSOC will balance these requests against each lab's consideration for space/funding, and in consultation with the rotation faculty, assign a match list for the first rotation. The process is repeated for the 2nd and 3rd rotations. The NSOC is very experienced in pairing students with compatible opportunities. If a student repeatedly requests a particular assignment, the NSOC will facilitate that match as soon as rotation space allows.

4.1.3 Student Responsibilities. Rare is the student who enters with such a broad-based knowledge of biochemistry that s/he is ready to immediately focus with absolute certainty on a particular research niche. Selecting only what one knows precludes the possibility of what "could be." IPiB students are encouraged to participate in rotations that expose them to a variety of fields, research methodologies, and laboratory cultures. Each rotation, however, is a serious undertaking, requiring significant student initiative and responsibility. Students should:

- Read about each lab beforehand, including in-depth reviews of research publications, technologies, and personnel lists. Check the IPiB web site too.

- Talk to faculty and their lab members beforehand so they know you have an interest in their research areas, and you can make an informed judgment about the directions you might like to pursue. Visit multiple faculty members and discuss your goals.

- When assigned to a lab, interact consistently and persistently with all members of the lab. Curiosity, interest, and intelligent questions will also help these people evaluate you and decide if they want you as a colleague.

- Show up on time to all lab activities and be responsible and aggressive towards whatever project you are assigned, even if this means working nights and weekends.

- Discuss what you are learning with other students, and especially with the assigned faculty member. Ask about real (not rotation) projects that might be available to new
students. Ask about funding opportunities. Ask how many new students, including those from other Programs, are under consideration for potential lab slots. Be proactive and determined in gathering information. This experience is part of your training to be a scientist.

4.1.4 Rotation Funding. For students who are not on fellowships or training grants, or direct admits, financial assistance is provided by the Program through the period of the first semester lab rotations. Once a thesis lab and major professor have been selected, financial assistance becomes the responsibility of the major professor.

4.1.5 Final Assignments. Near the end of the 3rd rotation, students will be asked by the NSOC for a ranked list of 3-4 preferred thesis advisor selections. The listed faculty are then asked whether they might accept one or more of these students into their groups. The matching process tries to optimize student/faculty choices, with attention to the funding and space in each lab. Traditionally, the final pairings are announced by the Steering Committee just before the Holiday Party, and lab groups welcome their new students as part of the collective celebration.

4.1.6 Starting in Your New Lab. Newly assigned students should report to their major professors the Monday following announcement of the final pairings, for guidance in registering for the spring semester, lab space assignments and other orientation procedures. Students should expect to begin working in their new lab immediately.

4.2 Checklist for Degree Progress

The Graduate School and IPiB policies for achieving a PhD are outlined in Section 3. However, the Program takes a keen interest in every student's individual progress. In practice, the ECC, Program staff, graduate committees, and major professors work continuously to help students achieve a timely completion of all requirements. The guidelines below summarize traditional procedures and timeframes. They are intended to help students anticipate Program deadlines and understand their personal responsibilities.

4.2.1 Key Contacts

- Program Staff:
  Flavia Arana (Ph: 265-2281, E-mail: farana@biochem.wisc.edu)
  Colleen Clary (Ph: 262-3899, E-mail: cclary@biochem.wisc.edu)
  Elyse Meuer (Ph: 261-1492, E-mail: eemeuer@wisc.edu)

- Examinations & Certification Committee (ECC), as of July 2009:
  Rick Amasino, Co-Chair (Ph: 265-2170, E-mail: amasino@biochem.wisc.edu)
  Dave Brow, Co-Chair (Ph: 262-1475, E-mail: dabrow@wisc.edu)

- New Student Orientation Committee (NSOC), as of July 2009
  Paul Friesen, Co-Chair (Ph: 262-7774, E-mail: pfriesen@wisc.edu)
  Mike Sheets, Co-Chair (Ph: 262-9452, E-mail: mdsheets@wisc.edu)

4.2.2 Year 1- Fall Semester

- Students admitted to the Program usually begin their graduate careers in the fall
semester. Earlier in that spring/summer, the NSOC and Program staff will send an informational packet about arriving on the UW campus and Program orientation procedures.

- Before fall classes begin, Program staff and the NSOC will meet with all new students to describe UW registration procedures, the lab rotation process, selection of a major professor, degree requirements, and Program expectations. By the end of the first week, everyone will be properly enrolled, payrolled for their stipend, registered for insurance, and prepared for their 1st assigned lab rotation.

- **First semester course work usually includes:**
  Biochem 660, Biochemical Techniques (2 cr)
  Biochem /BMC 701 Professional Responsibility (1 cr)
  Biochem 990/BMC 990, Research (4-7 cr, use call number for either NSOC Co-chair)
  Physical and/or Biological Sciences breadth requirements.

  Total course load for this semester is 12 cr.

- Once assigned to labs by the NSOC, students should report to their rotation advisors (see 4.1 above), and attend all classes for which they are enrolled.

- Approval by Steering Committee of permanent research labs/ major professors is usually completed before the end of this semester.

**4.2.3 Year 1 - Spring Semester**

- Students should meet with their major professor (or an NSOC chair if a lab assignment hasn’t been finalized) in December to choose course work for the coming semester.

- **Second semester course work usually includes:**
  Courses applicable to major or minor requirements
  Biochem /BMC 710 : Exploring Biochemical Function of Macromolecules (2 cr)
  Biochem/BMC Advanced Seminar (1 cr)
  Biochem/BMC 990, Research (use call number of major professor)

  Physical and/or Biological Sciences breadth requirements.

  Total course load for this semester is 12 cr.

- In consultation with the major professor, discuss general directions of research project, then draft a plan for completion of all major and minor course work. Remember, some UW and Dept courses are offered at irregular intervals or only during certain semesters.

- Mid-semester, the Program will contact students about future assignments for their teaching requirement. Students with prior teaching experience while enrolled in another **graduate** program can apply for a waiver of one semester of the teaching requirement if they submit a written request to the Program Office **before May 1**.
Student/course matches for the following spring/fall are announced before the end of the semester.

- In consultation with the major professor, students should select three members of the UW-Madison faculty to serve on their graduate committee, preferably prior to the end of the second semester/beginning of summer. At least one of these members must be from outside the IPiB faculty. As a matter of respect (and politeness), students should make personal appointments with these faculty (e-mail/phone) to request their committee service. Program staff will contact students and request the names of the 3 selected graduate committee members. The ECC will review these choices, assign 1 additional Program member, and notify students of the completed committee rosters. This notification will remind students to schedule their First Review Meeting prior to the start of the second year.

It is the student's responsibility to contact all graduate committee members and schedule the First Review Meeting (see 3.8.1). The major professor and at least 2 of the 4 assigned faculty members must attend. The student should also notify Program staff of the meeting's date and time so a First Committee Meeting Evaluation Form can be prepared. The meeting must be completed prior to the start of the second year. During this meeting, the student should present a concise review of their potential project and a summary of completed/proposed course work. The meeting should not last longer than 1 hour, and should result in a signed First Committee Meeting Evaluation Form (3.2.5), and an understanding about the project focus for the upcoming preliminary examination. If asked, Program staff will aid in locating an appropriate room.

4.2.4 Year 1 - Summer
- Enroll in Biochem/BMC 990 (2 cr) [Note that students who are Trainees or Fellows may need to register for more than 2 credits, depending on the terms of their traineeship or fellowship.]
  Hold First Review Meeting prior to the start of the Fall Semester.

4.2.5 Year 2 - Fall Semester
- Third semester course work usually includes:
  Courses applicable to major or minor requirements (4-6 cr)
  Biochem/BMC Advanced Seminar (1 cr)
  Biochem/BMC 990, Research (4-7 cr)

Total course load for this semester is 12 cr.

4.2.6 Year 2 - Spring Semester
- Fourth semester course work usually includes:
  Complete any remaining courses for major or minor requirements (4-6 cr)
  Biochem/BMC Advanced Seminar (1 cr)
  Biochem/BMC 990, Research (4-7 cr)

Total course load for this semester is 12 cr.
- In February-March, Program staff will contact students and graduate committee members to arrange specific dates and times for preliminary examinations. The exams are usually held during the month of April. A student's written proposal (Appendix 9.D) must be in the hands of their committee members, with an additional copy filed in the Program office, at least 2 weeks before the scheduled exam (see 3.8.2).

- Program staff will request the preliminary Warrant (3.8.3) from the Graduate School as part of the prelim scheduling process. After a successful exam, the Warrant is filed by the staff and a student will be notified of his/her pending dissertator status.

4.2.7 Year 2 - Summer
- Dissertators should register for 3 credits of 990 research during the 8-week summer session.

4.2.8 Year 3 and Beyond
- Dissertators should register for 2 cr of 990 research and 1 cr of seminar each fall and spring semester, and 3 cr of 990 each 8-week summer session. At least 1 graded seminar presentation per year should go towards Program requirement 3.3.2.

- Before May 31 of each academic year following the prelim, students must convene their graduate committees and present an oral and (2-3 page, succinct) written review of their research progress and future plans (see 3.8.4). Notify Program staff about the meeting date and time, and pick up an evaluation form for the meeting. Perceptive students will welcome these opportunities to apprise their committees regularly, since it is to no one's advantage to have unwarranted surprises at the final defense! Scheduling laggards will be warned that their registration authorization may be put on hold by the ECC if yearly meetings are not up-to-date. Perpetual laggards may face Program dismissal.

- When the student and major professor agree it’s time to wrap things up (!), discuss thesis format and content at the final yearly committee meeting, and obtain permission to begin writing. If necessary, schedule an extra pre-defense meeting for this purpose.

4.2.9 Arranging Your Thesis Defense
- Registration for this semester requires an indication of intent to defend.

- At least 2 months prior to the anticipated defense, schedule the oral final exam with your graduate committee, arranging a specific date, time, and venue. Notify Program staff of your intentions by submitting a "Request for PhD Examination Form." If ECC concurs that all other degree requirements have been met, Program staff will request a PhD Warrant and confirm defense schedule with committee and student.

- Consult Graduate School website for specific thesis format requirements. Follow them. ([http://info.gradsch.wisc.edu/education/completedegree/pguide.html](http://info.gradsch.wisc.edu/education/completedegree/pguide.html))

- Program staff will distribute defense announcements, remind committee members, and provide appropriate forms to major professor prior to the defense.
- Visit the Ph.D. Coordinator in Room 217 Bascom Hall for a thesis format review, or to clarify any questions about the approved use of tables, graphs, charts, etc. This simple pre-check may head off significant rewriting hassles after the defense!

- As part of a successful defense, students should obtain the signatures of all committee members on the Warrant, committee page, and the signature of the major professor on a copy of the Thesis Abstract.

- Immediately after a defense, students should contact the Graduate School (262-2433) to arrange an appointment for the final thesis review and deposition of the Warrant. If defending near a degree deadline, remember that Graduate School appointment times fill rapidly near the end of each semester. All thesis corrections and revisions must be final before this review. No changes can be accepted on the copy that is submitted to the Graduate School after the final review.

4.2.10 Congratulations!! You're done! You're no longer a student. Good luck with your career. The future is yours. You've earned it!

5. GRADUATION FROM IPiB WITH A MASTERS DEGREE

The IPiB Graduate Degree Program does not admit students directly into MS candidacy.

5.1 MS Course Requirements:

5.1.1 Required Course Work. Course work for admission (see 2.2 above), and Program course requirements for the PhD (see 3.1 above) must be met.

5.1.2 Seminars. After the first semester of graduate work, MS candidates must enroll each semester in one of the advanced (900 level) seminars offered by the department (Appendix 9.C).

5.1.3 Graduate School Requirements. The academic standards for the MS degree are the same as those for the PhD (see 3.5 above). A minimum of 10 credits of graduate-level didactic or laboratory course work taken at the UW-Madison are required for the MS degree, and a minimum of 16 credits (including 990 research or seminars) must be completed, in total.

5.2 MS Graduate Committee

An IPiB MS graduate committee is composed of three UW-Madison faculty members, including the major professor, who must be a member of the IPiB faculty. Committee composition, selected by the student and the major professor, must be approved by the ECC before the final examination.

5.3 MS Thesis and Final Exam

The student must write an MS thesis based on her/his research. The format of this thesis
will be determined by the major professor and the student. The final version of the thesis must be approved by the major professor and the other two members of the MS graduate committee.

6. PHD WITH JOINT MAJOR IN IPiB

In the joint PhD major Program, the candidate must meet all (above) Program requirements specified by IPiB, as well as by the other major department, and also meet the requirements for a Graduate School Minor Option A or Minor Option B (see 3.2, above).

7. JOINT MD-PHD PROGRAM

IPiB participates with the Medical School in offering a joint Program for students wishing to complete both the MD and PhD degrees. The basic prerequisites and requirements for a PhD in this Program are identical to those for a PhD with a major in IPiB (see 3. above). However, the Graduate School requirement for a minor (Option A or Option B), may be taken in Medical Sciences.

8. Minor Option A in Biochemistry

8.1 Admission to Minor Option A

8.1.1 Required Chemistry Courses. Candidates should have an undergraduate degree in biochemistry, chemistry, physics, or one of the biological or medical sciences. A minimum GPA of 3.0 (on a 4.0 scale) is required. In addition to meeting the general requirements of the UW-Madison Graduate School, course work in biology, chemistry, biochemistry, genetics, physics, organic chemistry, and physical chemistry is required. However, course deficiencies are made up during the first year of your graduate studies.

8.1.2 Minor Professor. A student must identify a member of the IPiB faculty to serve as the minor professor. The minor professor will advise the student on his/her graduate degree program, and serve as a member of the student's graduate committee.

8.2 Graduate Course Work for Minor Option A

8.2.1 General Biochemistry Course Requirements. A student must complete course Series 1 or course Series 2
- Series 1: Biochem 507 and Biochem 508
- Series 2: A total of 6 credits selected from among Biochem 601, Biochem 704, Biochem 612, and Biochem 620
Students with good preparation in chemistry will preferably select courses from Series 2 to meet this General Biochemistry Requirement.
8.2.2 Additional Biochemistry Courses. In combination with those credits earned for 8.2.1 (above), a total of 10 graduate-level credits in advanced biochemistry courses is required.

8.2.3 Transfer Credits. Transfer credit towards the Minor Option A in Biochem may be given for biochemistry courses taken while at another graduate institution. Students should consult with their minor professor (8.1.2), and with the ECC. Transfer of six semester credits is normally the maximum allowance by the Program.

8.3 Grades

A student must maintain cumulative average of B or better in all required biochemistry courses, with no grade lower than BC. Courses taken for pass-fail, satisfactory-unsatisfactory, or for audit may not be used towards the Minor Option A.

8.4 Examination and Review Procedures

8.4.1 Course Completion. By the time a student is ready for his/her preliminary examination, according to the timeline of the major program, all course work for the Minor Option A program should have been completed.

8.4.2 Exams. No preliminary or final examination in biochemistry is required for Minor Option A students. The minor professor is authorized to sign the Prelim Warrant in the student's major program, if the chemistry and biochemistry requirements (8.2 above) have been met.

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9.E Teaching Assignment Letter
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<td>Ralph, John</td>
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<td><a href="mailto:jralph@wisc.edu">jralph@wisc.edu</a></td>
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</tbody>
</table>
APPENDIX 9.B    Standing IPiB Faculty Committees

Steering Committee Composition

4-5 Biochemistry faculty
2-3 Biomolecular Chemistry faculty  
    (these will include the chairs of the Admissions/Recruiting, New Student Orientation, Examination/Certification and Student/Faculty Liaison Committees; the Program Director will serve as the chair of the committee)
1 trainer, according to guidelines above
2 students (non-voting members; one from each department).

Steering Committee Responsibilities

i. oversight of program and policy recommendations for approval by two departmental faculties.
ii. confirmation of thesis laboratory assignments
iii. oversee development of programmatic initiatives that will foster interaction among faculty and students in the program. These could include faculty lunches to hear about each other’s research, joint faculty meetings, etc.
iv. all other issues related to the program that are not dealt with by other committees.

Admissions and Recruiting Committee Composition

5-6 Biochemistry faculty
3-4 Biomolecular Chemistry faculty  
    Co-chairs from among the core faculty members listed above (1 or 2 from each department); 1 of the co-chairs from each department will be appointed to the Steering Committee.
1-2 trainers, according to guidelines above
2 students (non-voting members; one from each department)

Admissions and Recruiting Committee Responsibilities

i. review files for admissions/make admissions decisions.
ii. contact students to make offers and urge acceptance.
iii. development and implementation of recruitment strategies
iv. supervision of recruitees’ visits to campus during Feb-Apr.
v. delegation of recruiting functions to faculty and students in the program.

New Student Orientation Committee Composition (NSOC)

2-3 Biochemistry faculty
1-2 Biomolecular Chemistry faculty  
    (chair from among these core faculty)
1 trainer, according to guidelines above
2 students

New Student Orientation Committee Responsibilities (NSOC)

i. supervise orientation activities and advise students prior to assignment to thesis laboratory
ii. organize rotations and assignment of students to laboratories

Examination and Certification Committee Composition (ECC)

2 Biochemistry faculty
1 Biomolecular Chemistry faculty
   (chair from among these core faculty)
1 trainer, according to guidelines above
2 students

Examination and Certification Committee Responsibilities (ECC)

i. ensure students are effectively tracked through the program for timely completion of the requirements.
ii. in advising students on course selection, the advising and thesis committees should ensure that each student has adequate instruction in the core disciplines of biochemistry. In addition, to the extent consistent with optimal research training for each student, the advising and thesis committees should encourage cross-disciplinary training of students.

Student-Faculty Liaison Committee (SFLC) Composition

2-3 Biochemistry faculty
1-2 Biomolecular Chemistry faculty
   (chair from among these)
1 trainer, according to guidelines above
8-12 students
   (co-chair and vice-co-chair from among these) should include student representatives on other IPiB committees and be distributed among members of laboratories of Biochemistry, Biomolecular Chemistry and trainers.

Student-Faculty Liaison Committee (SFLC) Responsibilities

i. serve as a liaison between faculty and students, communicating the wishes, concerns and problems of the graduate student population to the faculty.
ii. promote educational and social interaction amongst students in the program (i.e. organization of student seminar series)
iii. development of programmatic initiatives that will foster interaction among faculty and students in the program; these might include retreats, student-hosted seminars, and student-run journal clubs.
**APPENDIX 9.C  IPiB Graduate Curriculum**

**IPiB GRADUATE CURRICULUM (2009-10)**

*Courses for Incoming IPiB Students* (3.1.2)

<table>
<thead>
<tr>
<th>Term</th>
<th>Num</th>
<th>Dept(s)</th>
<th>Title</th>
<th>Cr</th>
<th>Instructor/Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>660</td>
<td>Biochem</td>
<td>Biochemical Techniques</td>
<td>2</td>
<td>Wickens</td>
</tr>
<tr>
<td>I</td>
<td>701</td>
<td>Biochem/BMC</td>
<td>Professional Responsibility</td>
<td>1</td>
<td>Cox</td>
</tr>
<tr>
<td>II</td>
<td>710</td>
<td>Biochem/BMC</td>
<td>Exploring Biochemical Function of Macromolecules</td>
<td>2</td>
<td>Brow Rayment</td>
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</table>

*Ongoing for All Students*

<table>
<thead>
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<th>Term</th>
<th>Num</th>
<th>Dept(s)</th>
<th>Title</th>
<th>Cr</th>
<th>Instructor/Contact</th>
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<tbody>
<tr>
<td>I, II, Sum</td>
<td>990</td>
<td>Biochem/BMC</td>
<td>Advanced Research</td>
<td>1-12</td>
<td>major professor</td>
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</table>

*Courses that Meet the Biological Sciences Breadth Requirement* (3.1.3)

(No ECC approval required)

<table>
<thead>
<tr>
<th>Term</th>
<th>Num</th>
<th>Dept(s)</th>
<th>Title</th>
<th>Cr</th>
<th>Instructor/Contact</th>
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<tbody>
<tr>
<td>I</td>
<td>612</td>
<td>Biochem, Genetics, Micro</td>
<td>Prokaryotic Molecular Biology</td>
<td>3</td>
<td>Gourse</td>
</tr>
<tr>
<td>I, odd yrs</td>
<td>621</td>
<td>Biochem, Botany</td>
<td>Plant Biochemistry</td>
<td>3</td>
<td>Bednarek</td>
</tr>
<tr>
<td>I</td>
<td>630</td>
<td>Biochem, Pharm, Zool</td>
<td>Cellular Signal Transduction Mechanisms</td>
<td>3</td>
<td>Martin, Ruoho, Bresnick, Anderson, Miyamoto, Keely</td>
</tr>
<tr>
<td>I</td>
<td>640</td>
<td>Oncology, Bact</td>
<td>General Virology - Multiplication of Viruses</td>
<td>3</td>
<td>Ahlquist, Kalejta</td>
</tr>
<tr>
<td>I, even yrs</td>
<td>840</td>
<td>Biochem, Botany, Genetics</td>
<td>Regulatory Mechanisms in Plant Development</td>
<td>3</td>
<td>Bleecker, Amasino, Masson, Fernandez</td>
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<tr>
<td>I, even yrs</td>
<td>711</td>
<td>Biochem, AH&amp;BS</td>
<td>Sequence Analysis</td>
<td>2</td>
<td>Palmenberg</td>
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<tr>
<td>I, even yrs</td>
<td>712</td>
<td>Biochem, AH&amp;BS</td>
<td>Sequence Analysis Lab</td>
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<tr>
<td>II</td>
<td>726</td>
<td>Biochem, Micro</td>
<td>Regulation of Gene Expression in Prokaryotes</td>
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### Courses that Meet the Physical Sciences Breadth Requirement (3.1.3)
(No ECC approval required)

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<tr>
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<td>Biochem</td>
<td>Protein and Enzyme Structure and Function</td>
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<td>Holden, Rayment</td>
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<tr>
<td>I</td>
<td>624</td>
<td>Biochem</td>
<td>Mechanisms of Enzyme Action</td>
<td>2</td>
<td>Cleland, Reed</td>
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<td>I</td>
<td>665</td>
<td>Biochem, Chem</td>
<td>Biophysical Chemistry: Protein and Nucleic Acid Processes</td>
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<tr>
<td>I</td>
<td>800</td>
<td>Biochem</td>
<td>Practical Nuclear Magnetic Resonance Theory</td>
<td>2</td>
<td>Westler</td>
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<tr>
<td>II</td>
<td>704</td>
<td>Biochem, Chem</td>
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<td>Biochem</td>
<td>Coenzymes and Cofactors in Enzymology</td>
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<td>Reed, Fox</td>
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<td>II, even years</td>
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<td>Biochem</td>
<td>Macromolecular Crystallography Dynamics</td>
<td>2</td>
<td>Phillips</td>
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<td>Biochem</td>
<td>Biochemical Applications of Nuclear magnetic Resonance</td>
<td>2</td>
<td>Markley</td>
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<tr>
<td>II</td>
<td>872</td>
<td>Biochem, Chem</td>
<td>Selected Topics in Macromolecular and Biophysical Chemistry</td>
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### Advanced Seminar Courses (Requirement 3.3.1)
(No ECC approval required)

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APPENDIX 9.D  Presenting and Organizing a Seminar

Tips on seminar information content.

1. Think of the story you want to tell and organize your talk accordingly. The organization does not need to be historical and most times, the talk is much more interesting if it is not historical. It is more engaging to introduce a slide as “they wanted to ask a particular question”, rather than “next they did this experiment”.

2. The introduction of the seminar should 1) highlight the problem/question that you are addressing, 2) provide the state of the field (usually presented as a model) 3) the questions that you will address, 4) the new information that the papers provide and 5) how the data enhances or disapproves the model. You do not need to provide every detail you know; just those that are necessary to make your points; you do not want to overload the audience.

3. Always make a (verbal) transition between slides. The transition should logically summarize the slide you have just finished and introduce the next slide. Using the title of the upcoming slide is a good way to facilitate this.

4. Develop slides to introduce methods that are critical to understanding experiments that you are presenting. For example if a “Chip” assay is being used then explain the assay in a slide right before you show data.

5. Provide details when the listener needs to know that information.

6. The length of the talk should be at least 45 min leaving additional time for questions (a rough estimate for the number of slides would be in the neighborhood of 38 to 42 slides depending on your slide content).

7. The talk should have, on average, an introduction of the topic, data (taken from papers if a literature seminar), a summary, a future directions slide, and an acknowledgement slide for those that helped you.

8. In presenting data in a literature seminar, be critical. If you think that the conclusions are not supported by the data, etc. then say so.

Tips for slides

1. Use a font like “Arial” that is of the same thickness throughout the letter/number. (Avoid Helvetica since it is often absent on many computers) Fonts like “Times” are difficult to read from a distance because the thinner parts tend to fade out.

2. Each slide should convey one point or message.

3. Keep slides simple and uncluttered. Most people prefer white slides with black text and use colored text or figures to emphasize a point. Remember though that some people are color blind.
4. Animations are useful when you want to build a slide point by point. However, do not overdo it, as it can become a distraction. Sounds are definitely a distraction.

5. All slides should have a title that conveys the main point of the slide.

6. Use a font large enough to be read from back of room. Size 24 for text is a place to start; use larger size font for title.

7. Always have an outline at the beginning of your talk that gives your audience “the bottom line” of your talk. Most people do not like a “whodunit” seminar when you have to wait to the end of the presentation to get the “bottom line”. If it is helpful, reutilize the outline as you progress through your talk using arrows or changes in text color to indicate where you are in your talk.

8. Make sure the figures are labeled. When you are taking figures from papers, you will probably need to add additional information to slide. Make sure figures are appropriately referenced.
APPENDIX 9.E  Teaching Assignment Letter (Example)

To:    IPiB Graduate Students
From:  W. W. Cleland and John Denu for the Graduate Teaching Assignment Committee (GTAC)
Re:    Teaching Assignments
Date:  April

As a candidate for the PhD degree you must participate in the teaching program as part of your training. The requirement is two semesters of teaching duty. Teaching in BioCore or any courses outside the Biochemistry or Biomolecular Chemistry Departments will not be counted toward the two-semester teaching requirement.

The GTAC Committee makes teaching assignments as follows:

1. Instructors are asked how many assistants they would like to have.
2. List of available students is compared with total requests and number of slots is adjusted to this total.
3. Instructors are asked if they have particular students they would like to assist in their courses.
4. Students are told the number of slots in the various courses and are asked for first, second and third choices of assignments. Preferences for fall or spring can also be expressed. To aid in your choices, the duties of student assistants and the time required are summarized in the attached material.
5. Assignments are made in consultation with instructors teaching the course in order to try to meet both the instructors’ and students’ requests.

The number of slots available for the courses is as follows. The actual number assigned may be different.

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
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</thead>
<tbody>
<tr>
<td>Biochem 501</td>
<td>Biochem 501</td>
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<tr>
<td>Biochem 507</td>
<td>Biochem 508</td>
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<td>Biochem 601</td>
<td>Biochem 550</td>
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<td>Biochem 630</td>
<td>Biochem 704</td>
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<td>Biochem 575</td>
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<td>Biochem 651</td>
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<td></td>
<td>Bmolec Chem 503</td>
</tr>
<tr>
<td></td>
<td>Bmolec Chem 504</td>
</tr>
<tr>
<td>Biochem 501 Peer Mentoring (Year long assignment; see Dan Barnish)</td>
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</table>

34
Your Name: ______________________________

Your Preferences:

1\textsuperscript{st}: _________________________

2\textsuperscript{nd}: _________________________

3\textsuperscript{rd}: _________________________

\textit{NOTE: Anyone considering Biomolecular Chemistry 314 should first talk to Michael Sheets (262-9452; mdsheets@wisc.edu)}

Return your preferences to Flavia Arana by May ---

\textbf{APPENDIX 9.F}  First Committee Meeting Evaluation Form

\textbf{FIRST COMMITTEE MEETING EVALUATION FORM}
Name: ___________________________________________ Date: __________

Major Professor: __________________________________________

This form is to be completed by each first-year graduate student in the Integrated Program in Biochemistry Ph.D. program and distributed to her/his Thesis Committee before the first meeting, along with a xerox copy of the student’s undergraduate transcripts.

At the first-year meeting, chaired by the Major Professor, the student should solicit advice on the planned coursework from her/his Committee and make any agreed-upon modifications. A short (5-10 min.) description of the student’s expected research project will help the committee judge whether the coursework adequately addresses the student’s area of specialization. The Committee should sign the form to indicate their approval of the planned curriculum. The student should send copies of the signed form to her/his thesis advisor and the Student Services Coordinator (Flavia Arana).

1. Coursework completed and proposed:

<table>
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<th>Semester</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

2. Comment on student’s proposed coursework with respect to:

A) Requirements (see back for list of requirements; which courses still need to be taken? are there deficiencies that need to be made up?) And
B) The proposed research (are there courses that would benefit the student’s research program?)

3. **Proposed Minor Agreement.** List **ONLY** courses taken/to be taken to fulfill the Minor requirement. There are two minor options (A and B). The majority of our students select Option B which is the most flexible. An average GPA of 3.00 on all minor course work is required.

**Minor Option A (focused):** Requires a minimum of 10 credits in a single department.

**Minor Option B (distributed):** Requires a minimum of 10 credits in one or more departments and can include course work in the major department.
<table>
<thead>
<tr>
<th>Courses</th>
<th>Credits</th>
<th>Sem. Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>______</td>
<td>______</td>
</tr>
<tr>
<td></td>
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4. Approval: *ECC Committee* ________________________________

*Major Professor:* ________________________________

*Cmte Members:* ____________________________

__________________________ ____________________________
APPENDIX 9.G Yearly Progress Meeting Form

Student: ___________________________ Date: __________
Major Professor: _______________________
Committee Members: _______________________
Projected Dissertation Title: _______________________

Is the student making satisfactory progress?

Are there any adjustments to the student’s project or approach that should be made to enhance progress?

Summarize the work that will be required to complete the thesis project (use back of sheet, if necessary).

SIGNATURES:
Committee Members: _______________________
________________________
________________________

Student: _______________________

Major Professor: _______________________

Handbook: 2010-11
APPENDIX 9.H  Questions To Ask Of Prospective Thesis Advisors

1. What thesis projects would be available to me if I were to join your lab?
2. Would these projects expose me to a variety of different experimental approaches?
3. In general, how available will you be to answer questions I might have?
4. What is your philosophy regarding the amount of guidance the thesis advisor should provide to a student during preparation of the thesis proposal, literature seminars, thesis, etc.?
5. What are your expectations for the amount of time I should spend each day/week in the lab?
6. What regularly scheduled activities (e.g., group meetings, joint group meetings, research clubs) does your lab participate in that provide an opportunity to get outside input on my research project and to hear about the work of other students and postdocs?
7. Do you encourage your students to attend seminars and journal clubs, including those that may be outside of their narrow field of research?
8. Do students in your lab have the opportunity to attend scientific meetings where they can interact with researchers from other institutions?
9. Do you include your graduate students in professional activities that will familiarize them with their field of research, such as reviewing manuscripts and meeting with visiting speakers?
10. How long do you think it should take me to get my Ph.D. degree?
11. What are your former graduate students (if any) doing now?
12. What is your general philosophy of graduate training and what goals do you have for your graduate students?

Many of these questions are not simple and may not elicit a quick answer. However, any trainer should be willing to discuss these important issues with you. You may also want to discuss these issues with any students that are currently in the prospective advisor's lab. This list is by no means complete; you should spend some time thinking about what is most important to you in your graduate training.