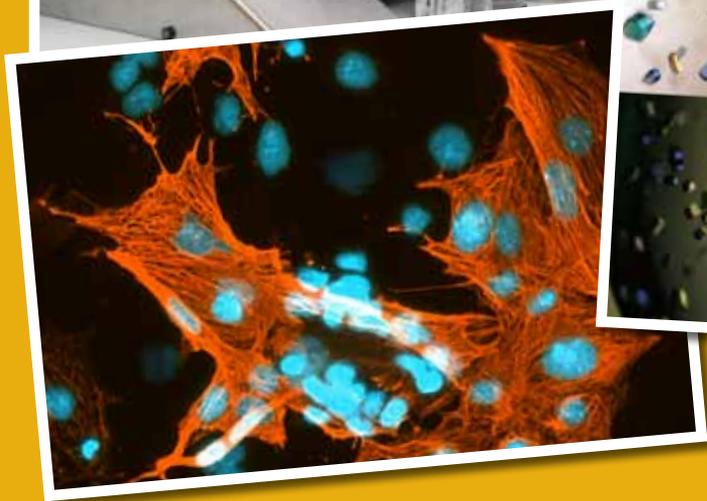


DEPARTMENT OF

BIOCHEMISTRY
& MOLECULAR BIOLOGY

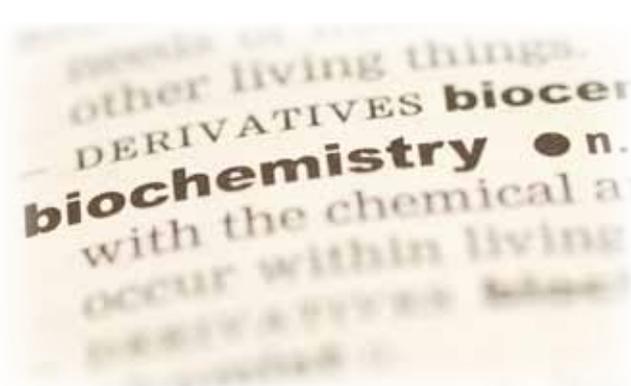
Graduate Student M A N U A L



School of Medicine

Table of Contents

I. Departmental Graduate Program..... 3	
A. Philosophy/Goals	
B. Requirements	
C. Departmental administration	
II. Entering Graduate School 4	
A. Joining the Biochemistry graduate program	
B. Financial support	
C. Outside employment	
D. Graduate student advisor	
E. Registration	
F. Orientation activities	
III. Program of Study for the PhD Degree 5	
A. Prerequisites	
B. Course requirements	
i. Withdrawal from a required course	
ii. Waiver of a requirement	
C. Time requirements	
D. Grouping of PhD program activities by year	
i. Year 1	
1. Course Work	
2. Laboratory Rotations and Research	
3. Major Professor Selection	
ii. Year 2	
1. Course Work	
2. Research	
3. Examining Committee Selection	
4. Qualifying Examination	
5. Checklist for Qualifying Exam	
6. Work in Progress (WIP) Seminar	
7. Teaching	
iii. Year 3 and forward until graduation	
1. Course Work	
2. Research	
3. Preliminary Examination	
4. Preliminary Exam Checklist	
5. Committee Meeting Requirements	
6. Work in Progress (WIP) Seminar	
7. Teaching	
iv. Graduation	
1. Course Work	
2. Dissertation	
3. Publications	
4. Final Examination	
5. Checklist for Dissertation Defense and Final Examination	
IV. Program of Study for the MS Degree..... 13	
A. Prerequisites	
B. Course Requirements	
C. Teaching	
D. Examining Committee Selection	
E. Qualifying Examination (for the MS Degree)	
F. Thesis	
G. Examination	
V. Dismissal Procedure..... 14	
VI. Grant/Fellowship Routing Procedures 15	
VII. Additional Information..... 16	
A. Information about the graduate school	
B. Accident with Injury Procedures	
C. Prior Approval for Travel	
D. Purchasing Regulations	
E. Shop Facilities	
VIII. The Faculty and Their Research Interests..... 17	
IX. Glossary of Terms 20	



I. Departmental Graduate Program

A. Philosophy/Goals

The Department of Biochemistry and Molecular Biology strives to provide you with a scientifically stimulating environment and an education that will enable you to design and execute a research program and to communicate the results thereof. Experimentation in the laboratory and a full understanding of the concepts and principles of biochemistry and molecular biology are vigorously emphasized throughout the graduate program. Successful attainment of these departmental goals should allow you to pursue a career in any aspect of the biochemical sciences in academia or industry. The Department sponsors the Doctor of Philosophy and the Master of Science degrees. Your research, leading to a Doctoral dissertation or a Master's thesis, will occupy the majority of your effort during the course of your studies. You will have a wide variety of areas from which to select a research focus, commensurate with the interests and skills of the faculty.

B. Requirements

The general academic requirements for graduation from the LSU Health Sciences Center are presented in the LSU Health Sciences Center Catalog (www.lsuhscc.edu/no/catalog). The catalog contains the official statements of the Health Sciences Center, including requirements of minimum residence period, semester hours, and examinations. However, most departments, ours included, require the completion of tasks in addition to those required by the School of Graduate Studies of the LSU Health Sciences Center. No department can sponsor a degree candidate who does not complete the requirements of the School of Graduate Studies as stated in the LSU Health Sciences Center Catalog.

Additional conditions for receiving a graduate degree in the Department of Biochemistry and Molecular Biology are fully described in this manual in the sections, "Program of Study for the PhD Degree" and "Program of Study for the MS Degree." The Program of Study for the PhD Degree and the Program of Study for the MS Degree were prepared by the Department to elucidate the requirements of the Department for the convenience of the faculty and students. These programs have been accepted by the faculty of the Department and will be used as a guide by your advisor throughout your tenure in the Department. Requirements specified in each "Program of Study" are binding. The curriculum, however, is dynamic and changes are instituted after careful consideration by the faculty. Whenever questions about requirement and curriculum arise, the "Program of Study" for your chosen degree represents the bylaws of the Department.

C. Departmental administration of graduate program

Dr. Arthur Haas
Head of Department
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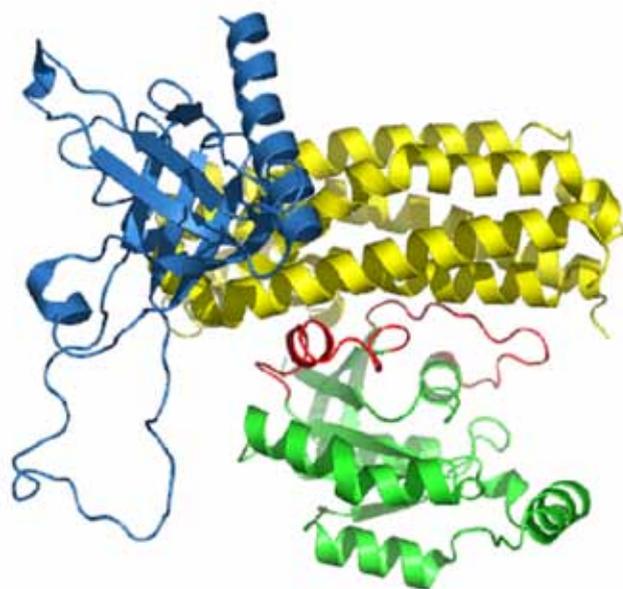
Departmental graduate committee and staff:

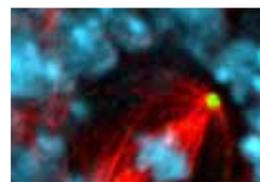
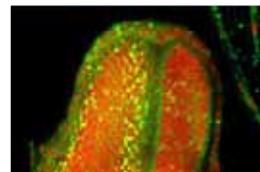
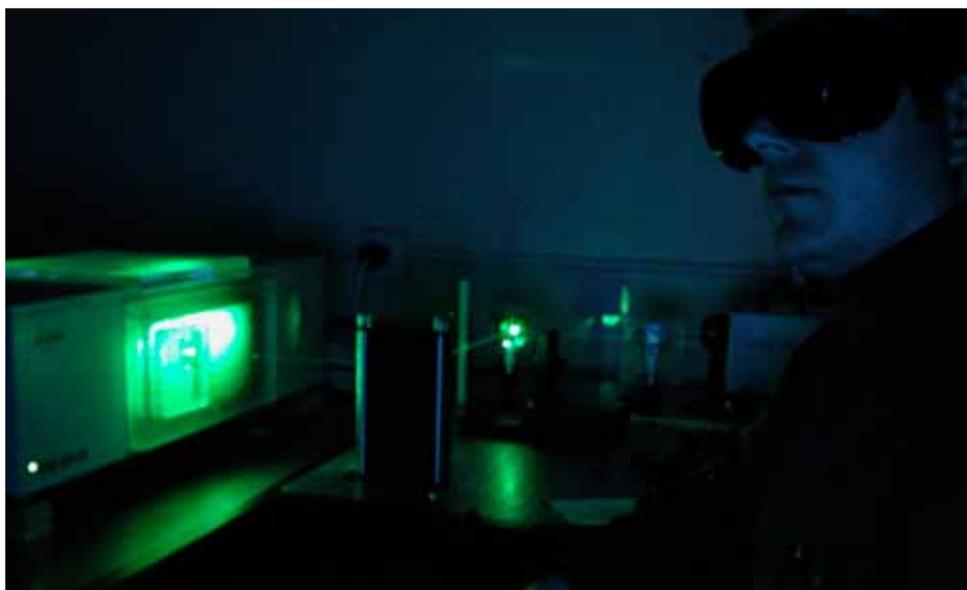
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II. Entering Graduate School

A. Joining the Biochemistry graduate program

At least one week prior to registration, you should visit the coordinator for academic affairs, in the Biochemistry and Molecular Biology Business Office, located in room 7101 (7th floor) of the Medical Education Building (MEB, 1901 Perdido Street, New Orleans, LA 70112) to complete the proper forms for matriculation. These include your appointment forms, biographical data forms, and state and federal tax forms. Completion of these forms ensures your enrollment in the graduate program and initiation of employment to Payroll Services.

B. Financial support

Depending upon the availability of funds, a stipend and a waiver of tuition will be provided to all graduate students in good standing with the Department of Biochemistry and Molecular Biology. The faculty suggests that you apply to agencies such as the Cancer Association of Greater New Orleans, Louisiana Board of Regents, and the National Science Foundation for all appropriate fellowships and grants. The Graduate Student Advisor or your Major Professor will assist you with these applications.

C. Outside employment

The Department prohibits students from pursuing employment or an academic degree outside the Department. However, a student in dire need may petition the faculty to be allowed to work outside, and will be notified of the decision reached by the faculty. International students need to be aware of potential conflicts between their visa status and outside employment.

D. Graduate Student Advisor

All first-year students are advised by the Graduate Student Advisor of the Department. The advisor will counsel you on the required courses until you choose a Major Professor. You should contact the advisor to arrange a meeting at the earliest possible date to establish your first semester curriculum.

E. Registration

For each semester, the students register for classes by filling out a Schedule of Courses form. The graduate student advisor or the Major Professor approves and forwards it to the Coordinator of Academic Area at the School of Graduate Studies, (504) 568-2211) and to the director of graduate studies. A minimum of nine credits or six credit is required to be considered a full-time student during the fall and spring semesters or summer semesters, respectively.

F. Orientation activities

Prior to the beginning of the first semester in graduate school, participation in a series of exercises is encouraged to prepare students for research life in the Department. These include a tour of the campus and student resources and courses in laboratory safety. The faculty members of the Department hold an orientation day, during which they present their research program and facilities. To help you select rotation laboratories, you are also encouraged to consult with faculty members and other graduate students on your own. At the beginning of your first semester, the graduate student advisor will assign you to the laboratories in which to conduct your laboratory rotations, based on your preferences and availability of space.

III. Program of Study for the PhD Degree

A. Prerequisites

General chemistry, organic chemistry, physical chemistry, mathematics (through calculus), and one year of biology are required. If necessary, these courses may be completed during the first year of graduate study.

B. Course Requirements

A total of 66 credits is required for the degree.

Course Title	Course Number	Number of Credits	Additional Notes
Biochemistry	INTER 111	4	Minimum grade of "B" is required
Cell Biology	INTER 121	3	Minimum grade of "B" is required
Molecular Genetic Mechanisms	INTER 122	2	Minimum grade of "B" is required
Control of Gene Expression	INTER 123	2	Minimum grade of "B" is required
Cell Signaling and Control of Cell Cycle	INTER 124	3	Minimum grade of "B" is required
Ethics in Biomedical Sciences	INTER 220	1	
Responsible Conduct in Research	INTER 260	1	
Introduction to Special Methods of Research	BIOCH 207	12 credits total	Laboratory research carried out during the first 2 years. A grade of "C" is unsatisfactory and may lead to dismissal from the program.
Seminar	BIOCH 298 and 299	6 credits total	The Department requires 6 credits of seminar, although the Graduate School permits only 4 of these to be applied toward graduation.
Thesis and Dissertation Research	BIOCH 300 and 400	15 credits total	This may be divided into 9 credits of Dissertation Research (400) and 6 credits of Thesis Research (300). Although students generally receive more credits, only 15 may be applied toward graduation.
Electives		17 credits total	These should be selected to provide a broad scientific background and should be chosen in consultation with the Graduate Student Advisor and/or your Examining Committee and Major Professor. At least 8 credits of electives must be taken from Departments other than the Department of Biochemistry and Molecular Biology.

i. Withdrawal from a required course

Withdrawal from a required course will be allowed only under extenuating circumstances and must be approved by the faculty.

ii. Waiver of a requirement

Whereas exceptions to Departmental policies are usually disallowed, some students may have reasonable justification to request the waiver of a requirement. For example, students who have graduate school credits with a grade of B or better in subjects from other universities may request that these credits be substituted for similar LSUHSC courses and counted toward graduation as requirements or electives, as appropriate.

The faculty of the Department must first approve a request for a waiver, and approved requests will be forwarded to the Dean of the School of Graduate Studies by the Director of Graduate Studies. The final decision on course waivers and Health Sciences Center requirements will be made by the Dean of the School of Graduate Studies. To request a waiver, you should petition the faculty in writing. Include all pertinent information (justification for the waiver, proposed benefits, etc.) in your petition and forward it to the Director of Graduate Studies.

C. Time requirements

For a PhD degree, the School of Graduate Studies requires a minimum of three years (9 semesters) of full time residence. The School of Graduate Studies further requires that all work towards a PhD degree be completed in not more than eight calendar years. Any requests for extension of this policy are subject to approval by the student's Graduate Examination Committee and the Dean. In the past, most students in the Department of Biochemistry and Molecular Biology have taken four to six years to complete their PhD degree.

D. Grouping of PhD program activities by year

i. Year 1

1. Course Work

Dependent on courses offered at the time of your registration, you will most likely be advised to take the courses listed below:

Fall Semester		
Course	Course Number	Credits
Biochemistry	INTER 111	4
Cell Biology	INTER 121	3
Molecular Genetic Mechanisms	INTER 122	2
Introduction to Special Methods in Research	BIOCH 207	3
Seminar	BIOCH 298	1
Spring Semester		
Course	Course Number	Credits
Control of Gene Expression	INTER 123	2
Cell Signaling and Cell Cycle Control	INTER 124	3
Introduction to Special Methods in Research	BIOCH 207	3
Seminar	BIOCH 299	1
Electives		max 6
Summer Semester		
Course	Course Number	Credits
Introduction to Special Methods in Research	BIOCH 207	2-6
Electives		max 6

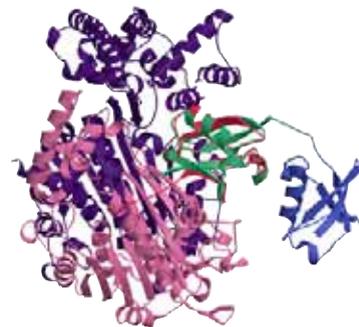
2. Laboratory Rotations and Research

A major portion of your course work in the first year will consist of spending four six-week periods of time in at least three different laboratories in the Department to gain first-hand knowledge of the research projects and techniques used. Rotations should be completed in two semesters after matriculation. These rotations constitute the requirements for credit in Introduction to Special Methods of Research (BIOCH 207) for the first two semesters. While the primary objective of the laboratory rotations is to introduce you to specialized procedures, it will also aid you in selecting a Major Professor. It is thus expected that one of the rotations will be through the laboratory of the Major Professor. The director of each laboratory through which you rotate will provide guidance during your time in his or her laboratory. You should consult with the Graduate Student Advisor, the faculty, and other graduate students for guidance in choosing your rotations.

Rotating students are expected to be in the lab when not in class during standard working hours and as necessary to perform their experiments. You should devote at least one half of your time in the first year to your laboratory rotations.

At the end of each semester, an oral Work-in-Progress (WIP) seminar of 15 minutes in length is given to the department. The faculty mentor will provide the student and the Graduate Student Advisor with a letter summarizing the student's progress and abilities at the conclusion of the rotation period, and a copy of this will be included in the student's files in the Department. Letter grades are given for the laboratory rotations.

Once you have finished laboratory rotations and selected a Major Professor, you can begin research on your dissertation project in the summer semester as part of Introduction to Special Methods in Research (BIOCH 207). The course of your summer studies should be decided in conjunction with your Major Professor.



3. Major Professor Selection

Each student shall select a Major Professor by 1 June after completion of the first year of graduate school. Any student who fails to identify a Major Professor by this date may be terminated from the Graduate Program. Special circumstances may be considered by the Graduate Student Advisor and the Director of Graduate Studies.

Selection of your Major Professor is a mutual decision between you and the faculty member and is a most important decision by both parties in determining the future course of your graduate studies. However, note that a decision to enter a laboratory *requires* the consent of the faculty person.

Selection of a Major Professor should be given careful deliberation, as this faculty member will guide you in your studies and research in graduate school. Faculty realizes that accepting a student represents a major commitment in time, effort, and financial resources (laboratory supplies, equipment, and stipend). You should determine whether the faculty person is willing to assume the responsibility for accepting you, and whether the laboratory has finances for supplies and stipend support. You should also consider whether previous students have completed their degree in a reasonable amount of time.

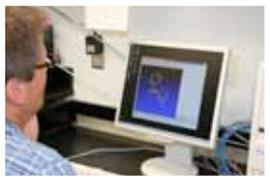
Continuation in the laboratory of the Major Professor is determined by mutual agreement of both the student and the Major Professor at all stages of study. Unforeseen circumstances (lack of adequate research grant support, transfer to another institution, etc.) may necessitate a change in Major Professor.

ii. Year Two

1. Course Work

Because research will occupy the majority of your time in later years, you should make every attempt to complete as much of your required course work as possible by the end of your second year. Dependent on course offerings at the time of your registration, you will probably be advised to take the courses listed below:

Fall Semester		
Course	Course Number	Credits
Ethics in the Biomedical Sciences	INTER 220	1
Introduction to Special Methods in Research	BIOCH 207	3
Seminar	BIOCH 298	1
Electives		4-10
Spring Semester		
Course	Course Number	Credits
Responsible Conduct in Research	INTER 260	1
Introduction to Special Methods in Research	BIOCH 207	3
Seminar	BIOCH 299	1
Electives		4-10
Summer Semester		
Course	Course Number	Credits
Introduction to Special Methods in Research	BIOCH 207	max 6
Thesis research	BIOCH 300	max 6
Electives		max 6



2. Research

Your research activities should occupy the majority of your time in this year. Your research should be registered as Introduction to Special Methods in Research (BIOCH 207) prior to your passing the Qualifying Examination and as Thesis Research (BIOCH 300) after passing the Qualifying Exam.

3. Examining Committee Selection

The Examining Committee will assume responsibility for the direction of your studies and research, and will administer your Qualifying Examination, Preliminary Examination, and Final Examination. Each Examining Committee should be composed of five (or more) graduate faculty members. Requirements for its composition are as follows:

- Your Major Professor must have a primary or adjunct appointment in the Department of Biochemistry and Molecular Biology;
- The majority of the committee must have a primary appointment in the Department of Biochemistry and Molecular Biology;
- At least one member should be a tenured or tenure-track faculty member from outside the Department (experts from outside the University may be invited to participate in the committee as non-voting members at the discretion of the Examining Committee), who is either knowledgeable in your research area or who appropriately can broaden the peer-review research perspective;
- Faculty, who have potential conflicts of interest, such as former advisor-postdoc or advisor-graduate student relationships, can serve as non-voting members, if their expertise is important for the research development;
- The head of the examining committee must be a member of the Examining Committee, but he or she should not be your major professor; and
- All members of the committee must have formal Graduate Faculty membership with the School of Graduate Studies, either at the full or associate level, at the time of committee appointment [For graduate faculty membership, please see (http://graduatestudies.lsuhs.edu/graduate_faculty_membership.aspx)].

In taking over responsibility from the Graduate Student Advisor, the Examining Committee and Major Professor will direct your academic and research efforts. Although continuity of this committee is desirable, the composition of the Examining Committee may be altered during your course of study to reflect changes in your research or Major Professor. Members of the Examining Committee are chosen by your Major Professor and must be approved by the Director of Graduate Studies, the department Graduate Committee, and the department head; names of suggested members should be communicated in writing or by email to the Director of Graduate Studies.

4. Qualifying Examination

All students must have attempted their Qualifying Exam by the end of the fourth semester following matriculation (exclusive of summer semesters) or be terminated from the program. This examination is administered by the student's Examining Committee. If the student receives a conditional pass on the Qualifying Exam, he/she must complete the prescribed remediation within the time frame stipulated by the Examining Committee. Under extraordinary circumstances such as illness or family emergency, the Director of Graduate Studies may grant an extension at the written request of the student.

A written research proposal that delineates the area in which the student wishes to perform his/her dissertation research must be prepared. This proposal should be prepared according to form PHS 398 guidelines for grant applications to the National Institutes of Health (NIH) and distributed to all members of the committee at least two weeks prior to the examination. The scientific proposal should include a title, an abstract, specific aims, background information, working hypotheses, experiments designed to test the hypotheses, and pertinent references. It is not necessary to complete the Budget, Resources and Environment, and Other Support pages. In addition to being tested on the specific proposal, the student may also be examined (written and/or orally) on related scientific disciplines to ensure breadth of knowledge. To pass the Qualifying Examination, the student must receive positive ("Pass") ballots from a majority of the committee members.

5. Checklist for Qualifying Exam

- **At least two weeks prior to the exam, submit the following documents, in listed order, to each member of the committee.**
 - ❖ front page with title of research proposal, abstract, and candidate's name
 - ❖ a research proposal with a maximum of 25-pages in standard NIH format using PHS 398 directions
 - ❖ curriculum vita for Qualifying Exam, using standard 2-page Graduate School form (http://www.medschool.lsuhsoc.edu/biochemistry/PDF%20files/qualifying_exam_forms.pdf)
 - ❖ listing of all courses taken and grades received
 - ❖ Request for Qualifying Examination using the standard form (http://www.medschool.lsuhsoc.edu/biochemistry/PDF%20files/qualifying_exam_forms.pdf)
 - ❖ it must be signed by the Director of Graduate Studies, submitted to the Graduate School, and a copy provided for the office at least two weeks prior to exam.
- **Reserve a room for the examination through the departmental business office (contact office).**

- **For the Qualifying Exam itself,**
 - ❖ Prepare a brief (10-15 min) presentation with slides or overheads to be presented at the examination.
 - ❖ Prepare to offer an oral defense of the research proposal and, as appropriate, other material.
 - ❖ Prepare a Report of Qualifying Examination using the standard form (http://www.medschool.lsuhsoc.edu/biochemistry/PDF%20files/qualifying_exam_forms.pdf) and bring this to the Examination.
 - ❖ Each member of the Examining Committee must indicate his or her vote (pass/fail) and sign the Report.
 - ❖ The committee may also enter recommendations (courses to be taken and other remediation and/or training) on this form.
 - ❖ Although it is not required for you to bring coffee or refreshments to the examination, you may elect to do so.
- **Upon completion of the Qualifying Exam,**
 - ❖ transmit the signed Report of the Qualifying Examination to the Director of Graduate Studies and the Graduate School within 48 hours of the event.

6. Work in Progress (WIP) Seminar

WIPs are seminars in which you present your ongoing research and delineate your plans for further research. You are required to present one WIP seminar per year to the Department. The requirement begins during the second year and continues until graduation. Directly contact the departmental Seminar Coordinator (Dr. David Worthylake, dworth@lsuhsoc.edu, 504-568-5176) to schedule your seminar for a date/time that will be compatible with your Examining Committee members' schedules.

7. Teaching

The faculty considers teaching to be an important part of graduate student training. As a rule, after your first year, you will be expected to participate as a teaching assistant in nursing, dental, or medical school courses offered by the Department in each of your subsequent years. Teaching assignments will be made before the beginning of each academic year. During your second and third years of graduate studies, you may be responsible for lecture attendance, supervised presentation of a portion of the lecture material, administration of examinations, grading of quizzes, participation in review and discussion sessions, and tutoring as assigned by the course director. An evaluation of your teaching performance will be provided to the department head, the student, and the student's Major Professor by the course director of each of the courses in which you assist.

iii. Year 3 and forward until graduation

1. Course work

Course work during these years usually consists of Seminar (BIOCH 298, BIOCH 299) and those courses necessary to fulfill the requirements for graduation.

2. Research

You should concentrate extensively on your research during the final years of your tenure with the Department. Your research should be registered as Thesis Research (BIOCH 300) prior to your passing the Preliminary Examination and as Dissertation Research (BIOCH 400) after passing the Preliminary Exam. Your research should form the basis for your dissertation, as well as for publications in peer-reviewed journals.

3. Preliminary Examination

All students must have attempted their Preliminary Exam by the end of the fifth semester following matriculation, exclusive of summer semesters, or be terminated from the program. You must pass this examination in order to continue in the PhD program. If the student receives a conditional pass on the Preliminary Exam, he/she must complete the proscribed remediation within



the time frame stipulated by the Examining Committee. Under extraordinary circumstances such as illness or family emergency, the Director of Graduate Studies may grant an extension at the written request of the student.

The Preliminary Examination is administered by the student's Examining Committee. A research proposal in an area clearly different from that of the student's proposed dissertation research must be prepared according to form PHS 398 guidelines, with the exception that a limit of 12.5 pages is to be used. The purpose of this proposal is to provide the student with an opportunity to gain breadth of knowledge and to demonstrate independence in conceiving and designing a research protocol. The topic is to be chosen by the student and then approved by the Examining Committee. The proposal should include a title, an abstract, specific aims, background information, working hypotheses, experiments designed to test the hypotheses, and pertinent references. It is not necessary to complete the Budget, Resources and Environment, and Other Support pages. In addition to being tested on the specific proposal, the student may also be examined (written and/or orally) on related scientific disciplines. In order to pass the Preliminary Examination, the student can receive no more than one negative ("Fail") ballot from the committee members. After passing the preliminary examination, the student becomes a candidate for the PhD degree.

For the purpose of the Preliminary Examination, the Major Professor will designate one of the other committee members as chair, subject to approval by the Director of Graduate Studies.



4. Preliminary Exam Checklist

- At least two weeks prior to the Preliminary Exam, submit the following documents to each member of the committee:
 - ✦ front page with title of research proposal, abstract, and candidate's name, and
 - ✦ research proposal with a maximum 12.5-pages in standard NIH format using PHS 398 directions.
 - ✦ Prepare a Request for Preliminary Examination using the standard 1-page Graduate School form (http://graduatestudies.lsuhsu.edu/Forms/Request_Preliminary_Exam.pdf) available online.
 - ✦ It must be signed by the Director of Graduate Studies and the Dean of the Graduate School, and a copy provided for the office at least two weeks prior to exam.
- Reserve a room for the examination through the departmental business office
- For the Preliminary Exam itself,
 - ✦ Prepare a brief (10-15 min) presentation with slides or overheads to be presented at the examination.
 - ✦ Prepare to offer an oral defense of the research proposal.
 - ✦ Prepare and bring a Report of Preliminary Examination using the standard Graduate School 1-page form (<http://graduatestudies.lsuhsu.edu/Forms/ReportPreliminaryExamination.pdf>).
 - ✦ Each member of the Examining Committee must indicate his or her vote (pass/fail) and sign the Report. The committee may also enter recommendations (courses to be taken and other remediation and/or training) on this form.
 - ✦ Although it is not required for you to bring coffee or refreshments to the examination, you may elect to do so.
 - ✦ Upon completion of the preliminary exam, the completed "Report of the Preliminary Examination" must be signed by the Director of Graduate Studies and transmitted to the Graduate School within 48 hours of the event for the Graduate School Dean's signature.

The chair will be responsible for providing a written summary of the examination and future course of study to the student, Major Professor, and Director of Graduate Studies for inclusion in the student's file within one month of the exam.

5. Committee Meeting Requirements

Students must organize at least two committee meetings per year, following Preliminary Examination completion, to assess progress. The student must provide a written summary of progress to committee members at least one week prior to the committee meeting. The major professor will provide a written summary of student's deficiencies, strengths, and progress; copies should be distributed to the student, committee members and Director of Graduate Studies one week prior to the committee meetings. Following the committee meeting, the head of the examining committee will provide a written summary of the meeting discussion to the student, committee members, and Director of Graduate Studies. Copies of all three documents should be placed in the student's departmental file. Failure to hold biannual committee meetings will result in an independent evaluation of progress by the Director of Graduate Studies and the Graduate Committee and result in possible suspension or termination from the program.



6. Work in Progress (WIP) Seminar

You continue to be required to present at least one WIP seminar per year to the Department. Directly contact the departmental Seminar Coordinator (Dr. Edward Wojcik, ewojci@lsuhsc.edu, 504-568-2058) to schedule your seminar for a date/time that will be compatible with your Examining Committee members' schedules.

7. Teaching

You continue to be expected to participate as a teaching assistant in nursing, dental, or medical school courses offered by the Department. During the fourth year, students may also serve as supervisors of second or third year teaching assistants.

iv. Graduation

1. Course Work

You must have completed all coursework as required by the Graduate School and the Department.

2. Dissertation

Your research findings will be presented in your dissertation, which will form the basis of your Final Examination. Your Major Professor and Examining Committee should assist you in determining when the experimental work is complete and in organizing and correcting early drafts of the document. Details regarding its format should be obtained from the Graduate School. The findings in this document must represent original and important contributions to the field of study. Evidence for this is usually provided by the required publication of at least some of the findings as a full paper. You are also encouraged to present your

findings at national or international meetings.

3. Publications

The student is required to have at least one full-length, peer-reviewed paper published or in press prior to approval by the five-member committee that the requirements for the PhD degree have been fulfilled.

4. Final Examination

After preparing a dissertation based on original, meritorious research, the PhD candidate will present a dissertation defense to the members of the Department of Biochemistry and Molecular Biology and all other interested parties. The candidate will also defend the dissertation to the Examining Committee in a session preceding or following the presentation.

You become eligible to take the Final Examination one academic year after having passed the Preliminary Examination. Most students, however, require two years to complete their dissertation research. Students that require more than three years to complete their dissertation research must obtain approval of an extension from their Examining Committee and the Director of Graduate Studies.

After you have passed the Final Examination, you must then submit copies of the approved dissertation to the Graduate School (original and one copy), the Department (one copy), your Major Professor (one copy), and any member of your Examining Committee who requests a copy.



5. Checklist for Dissertation Defense and Final Examination

- At least two weeks prior to the dissertation defense,
 - ↻ Prepare and submit a Request for Dissertation/Thesis Defense and Final Examination using the standard 1-page Graduate School form (http://graduatestudies.lsuhscc.edu/Forms/Request_Dissertation_Thesis_Defense_&_Final_Exam.pdf); this must be signed by the Director of Graduate Studies and Dean of the Graduate School two weeks prior to the examination.
 - ↻ Distribute a copy of the final form of the dissertation to each member of your committee.
 - ↻ Contact the Seminar Coordinator to schedule your seminar for a date/time that will be compatible with your Examining Committee members' schedules.
 - ↻ Reserve a room for the seminar and examination through the departmental business office.
 - ↻ Provide the title of your seminar to the seminar coordinator. The Department will distribute the seminar notices.
- For the defense itself,
 - ↻ Prepare a 50-minute seminar with slides to be presented to the Examining Committee, members of the Department, and the University community.
 - ↻ Prepare to offer an oral defense of the research proposal and, as appropriate, other material in an open question session following the seminar.
 - ↻ Prepare to offer an oral defense of the research proposal and, as appropriate, other material in the closed question session with the Examining Committee.
 - ↻ Prepare a Dissertation/Thesis Defense Final Examination Report using the standard 1-page Graduate School form (<http://graduatestudies.lsuhscc.edu/Forms/ReportPreliminaryExamination.pdf>) and bring this to the closed, oral defense to be signed by your committee members, Director of Graduate Studies, and Dean of the Graduate School.
 - ↻ After these activities are successfully completed, a revised and final version of the dissertation/thesis must be approved by the Examining Committee.
 - ↻ Submit final copies of the approved dissertation to the Graduate School (original and one copy), the Department (one copy), your Major Professor (one copy), and any member of your Examining Committee who requests a copy.

[Approved by the Biochemistry and Molecular Biology Faculty on 30 July 1987, 12 August 1987, 2 June 1988, 3 February 1989, 25 April 1990, 9 April 1991, 11 March 1992, 12 May, 1993, 9 June, 1994, 3 February 1997, 17 June 1997, 13 August 1997, 7 September 2004, 28 October 2004, and 10 October 2007.]

IV. Program of Study for the MS Degree

The Department does not enroll students specifically for the study of the MS degree. Yet in extenuating circumstances, the MS degree can be conferred to students who have matriculated into the PhD graduate program. Students will thus typically have completed several, but not all, of the activities in the PhD program.

Minimum requirements for obtaining the MS degree are listed below.

A. Prerequisites

General chemistry, organic chemistry, physical chemistry, mathematics (through calculus), and one year of biology are required. If necessary, these courses may be completed during the first year of graduate study.

B. Course Requirements

A total of 39 credits are required for the degree. Policies for withdrawal from a required course and waiver of a requirement are as for the PhD program.

Course Title	Course Number	Number of Credits	Additional Notes
Biochemistry	INTER 111	4	Minimum grade of "B" is required
Cell Biology	INTER 121	3	Minimum grade of "B" is required
Molecular Genetic Mechanisms	INTER 122	2	Minimum grade of "B" is required
Control of Gene Expression	INTER 123	2	Minimum grade of "B" is required
Cell Signaling and Control of Cell Cycle	INTER 124	3	Minimum grade of "B" is required
Ethics in Biomedical Sciences	INTER 220	1	
Responsible Conduct in Research	INTER 260	1	
Introduction to Special Methods of Research	BIOCH 207	8 credits total	Laboratory research carried out during the first 2 years. A grade of "C" is unsatisfactory and may lead to dismissal from the program.
Seminar	BIOCH 298 and 299	3 credits total	The Department requires 6 credits of seminar, although the Graduate School permits only 2 of these to be applied toward graduation.
Thesis Research	BIOCH 300	6 credits total	Although students generally receive more credits, only 6 may be applied toward graduation.
Electives		6 credits total	These should be selected to provide a broad scientific background and should be chosen in consultation with the Graduate Student Advisor and/or your Examining Committee and Major Professor.

C. Teaching

The faculty considers teaching an important part of academic training. As a rule, after their first year, students will be expected to participate as teaching assistants in nursing, dental, or medical school courses offered by the Department. Teaching assignments will be made before the beginning of each academic year. Students may be responsible for lecture attendance, supervised presentation of a portion of lecture material, administration of exams, grading of quizzes, participation in review and discussion sessions, and tutoring assigned by the course director. An evaluation of your teaching performance will be provided to the department head, the student, and the student's Major Professor by the course director of each of the courses in which you assist.

D. Examining Committee Selection

A five-member Examining Committee may be selected as for the PhD program. Alternatively, a three-member Examining Committee is sufficient for pursuing the MS degree. This committee is to be composed of two graduate faculty members from the Department of Biochemistry and Molecular Biology (one of whom is the Major Professor) and one graduate faculty member from another department. At least one member must hold a primary appointment in the home department.

E. Qualifying Examination (for the MS degree)

A Qualifying Examination for the MS degree is taken about one month after the successful completion of two complete semesters (excluding summer sessions). It is administered by the student's Examining Committee. An extension in time for this examination requires the permission of the student's committee. The qualifying examination may include oral and written components at the discretion of committee members. A short written summary of the research conducted during the first year must be distributed to the committee prior to the examination. Topics of the examination will include general biochemistry (and relevant scientific disciplines) and research completed in Introduction to Special Methods of Research (BIOCH 207). Direction for the student's further study will be formulated according to the findings of this examination. The student must pass this examination prior to registration for Thesis Research (BIOCH 300). Forms for the qualifying exam (http://www.medschool.lsuhsu.edu/biochemistry/PDF%20files/qualifying_exam_forms.pdf) are available online.

F. Thesis

A formal thesis must be submitted to and approved by the Examining Committee.

G. Examination

When the thesis is nearly completed, each candidate is required to pass a comprehensive examination which may be written, oral, or both. It is expected that the requirements for the Master's degree will be completed within two calendar years after matriculation. Forms for the thesis defense (<http://graduatestudies.lsuhsu.edu/Forms/ReportPreliminaryExamination.pdf>) are available online.

[Approved by the Biochemistry and Molecular Biology Faculty on 30 July 1987, 12 August 1987, 2 June 1988, February 1990, 13 August 1997, October 2004 and 10 October 2007]

V. Dismissal Procedure

A student may be dismissed from the Department if his or her grade point average falls below 3.00. A student may also be dismissed from the Department upon receiving a grade of less than B in Biochemistry, Cell Biology, Molecular Genetic Mechanisms, Control of Gene Expression, and Cell Signaling & Cell Cycle Control. Students with serious academic problems may be eliminated from the rolls of the Department at the end of any semester. The decision to terminate a student's association with the Department is made by a vote of the faculty and approval by the Director of Graduate Studies. Any student who is terminated has the option of appealing the decision of the faculty to the Director of Graduate Studies. This appeal, listing all of the facts that the student feels are pertinent to the situation, should be submitted to the Director of Graduate Studies within one month after notification of the decision to terminate.



VI. Grant / Fellowship Routing Procedures

The Biochemistry Business Office is available to help graduate students and post-doctoral fellows with grant and fellowship applications. All fellowship and grant applications must be routed to the Office of Research Services via the Biochemistry Business Office regardless of whether the individual or the institution receives the award payment.

All fellowship and grant applications **MUST** be turned in to the Biochemistry Business Office at least 15 working days in advance of the application deadline for timely processing and institutional approval. It is highly recommended that you consult one of the business office staff including the Business Manager as soon as you decide to apply for a fellowship or grant. Provide a copy of the guidelines from the funding agency so the business office staff can assist you with the budget section.

The Biochemistry Business Office will prepare the yellow routing sheet for signatures and you will be contacted when it is ready for your signature. The business office will handle the balance of the routing procedures. You will be notified when your application has been reviewed and approved by the Vice Chancellor for Academic Affairs. The Office of Research Services website (<http://www.lsuhs.edu/no/administration/rs/GrantsContractsProcessing.htm>) lists the requirements of what to route for both electronic and paper applications.

A. Checklist (Route Sheet)

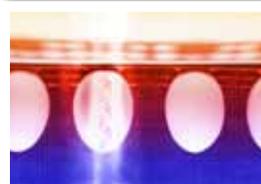
All proposals for extramural support, regardless of source, must be accompanied by an original "LSUHSC Proposal Checklist". This form assures that the appropriate officials review and approve each proposal in accordance with LSUHSC and granting agency regulations. These forms are available in the Biochemistry and Molecular Biology Business Office.

B. Review and Approval

Each proposal must be reviewed and approved by each of the following persons:

1. The Department Head (Dr. Haas) reviews the application and signs accordingly.
 2. Radiation Safety Officer signs for isotope approval and biohazards (recombinant DNA, carcinogens, etc.). This step in the routing requires a copy of the "Materials and Methods" section of your proposal.
 3. If you are using animals or human subjects in your research, you will need to apply for approval. This includes Institutional Review Board Training for research involving human subjects and Institutional Animal Care and Use Training for research involving other animal species. You should see the Business Office for the complete training and approval procedures.
 4. Once the proposal is complete, the business office will forward the proposal to the Office of Research at 433 Bolivar Street for administrative approval.
 5. The final step in the routing is the review of the budget by the Office of Sponsored Projects in the Resource Center (433 Bolivar Street). After their approval, Dr. Joseph Moerschbaecher, Vice-Chancellor for Academic Affairs, usually signs as the official university representative.
- C. After all approvals and institutional signatures are obtained, the business office will return the proposal to you.
- D. It is your responsibility to be sure all corrections are made on your final copy and to make the required number of copies of the entire completed and approved application. One complete copy must be given to the Biochemistry Business Office for the Departmental files. Check your application guidelines for the number of copies to be submitted to the granting agency. Be sure to keep copies for your own use and reference.
- E. You are responsible for mailing the completed application, the required number of copies, and any necessary supporting documents. If the cost of the postage is to be covered by a faculty member's grant or by the Department, the Biochemistry Business Office Staff will be glad to explain the proper procedure to you.





VII. Additional Information

A. Information about the graduate school

For contacting people outside the Department of Biochemistry and Molecular Biology or for general information about the graduate school, please see the graduate school webpage (<http://graduatestudies.lsuhscc.edu/>) and the LSU Health Sciences Center Catalog (<http://www.lsuhscc.edu/no/catalog/>).

B. Accident with Injury Procedures

An up-to-date Environmental Health and Safety Manual containing LSUHSC safety information and procedures is available on the web at (http://www.is.lsuhscc.edu/safety/EHS_SafetyManual.doc).

All Cases of Injury—Students and all LSUHSC personnel should follow the procedure laid out in the Environmental Health and Safety Manual and additionally contact:

Environmental Health and Safety

Office Hours: 8:00 a.m. - 4:30 p.m.

M-F

MEB Rm 2215

1901 Perdido New Orleans, Louisiana 70112

Phone (504) 568-6585 Fax (504) 568-5185

Website: <http://www.is.lsuhscc.edu/safety/default.aspx>

C. Prior Approval for Travel

Any study-related travel for which you plan to be reimbursed must have prior approval by the Business Office before you depart. You must adhere to all state travel regulations. As with the purchasing regulations, it is imperative that you consult the departmental Business Office as soon as you begin planning your trip. All airline tickets must be purchased according to current rules. Please contact the Business Office for details.

D. Purchasing Regulations

As a state institution, Louisiana State University Health Sciences Center and all departments thereof must adhere strictly to state purchasing laws. The Department recommends that all purchases be approved by the appropriate faculty advisor or Major Professor and the Business Office. The personnel of the Business Office are available to explain the correct policies to you. Students should discuss the proper purchasing procedures with the laboratory head before making any purchases.

E. Shop Facilities

The departmental electronics and fabrication shops are capable of performing most routine maintenance and repairs on research equipment used in-house. The facility is also capable of manufacturing many different types of specialized research equipment. The laboratory head should guide you in making appropriate use of the departmental shops. This facility is managed by Mr. Scott Neville, a departmental Instructor.

VIII. The Faculty and Their Research Interests

Primary Appointments:			
Name	Title	Degree	Research Interests
Suresh K. Alahari	<i>Associate Professor</i>	PhD, Drexel University, 1994	Biochemistry of cell adhesion.; Mechanism of action of Nischarin in tumor cell migration and invasion
William C. Claycomb	<i>Professor</i>	PhD, Indiana University, 1969	Biochemistry of cell proliferation and cell differentiation; Cell Cycle Control
Shyamal Desai	<i>Assistant Professor</i>	PhD, University of Bombay, 1991	The role (s)of ubiquitin and ubiquitin-like proteins in tumorigenesis; Mechanism of tumor cell death and drug resistance
Arthur L. Haas	<i>Roland Coulson Professor & Head</i>	PhD, Northwestern University School of Medicine, 1979	Ubiquitination; The roles of ubiquitin and ISG15 conjugation in cellular regulation
Sunyoung Kim	<i>Assistant Professor</i>	PhD, University of Michigan, 1994	Biochemistry and biophysics of protein families involved in cell cycle, DNA repair, and signal transduction; chemical and structural tuning of proteins to diverse biological functions
Wayne V. Vedeckis	<i>Amgen Professor of Oncology</i>	PhD, Northwestern University, 1974	Steroid hormone action; Structure, function, and genomic interactions of glucocorticoid receptor proteins; Leukemia
Edward J. Wojcik	<i>Assistant Professor</i>	PhD, University of Michigan, 1994	Animal cell division, mitosis and cancer by studying cytoskeletal processes during cell division including centrosome duplication and the regulation of microtubule motor proteins
David Worthylake	<i>Assistant Professor</i>	PhD, University of Utah, 1998	A structural approach focusing on the molecular mechanisms by which IQGAP1 and Tiam1 destabilize cell-cell junctions



Emeritus Faculty:

Name	Title	Degree	Research Interests
Robert Roskoski, Jr.	<i>Professor</i>	MD, 1964, PhD, University of Chicago, 1968	Regulation of tyrosine hydroxylase activity by phosphorylation; Enzymology of farnesyl-protein transferase and Ras modification

Auxiliary Appointments

Name	Title	Degree	Research Interests
Jawed Alam	<i>Associate Professor</i>	PhD, Purdue, 1983	Receptor mediated transport of heme to liver and heme dependent regulation of gene expression
Haydee E. P. Bazan	<i>Boyd Professor of Ophthalmology, and Biochemistry and Molecular Biology</i>	PhD, National University of the South, 1975	Retina and cornea biochemistry; neural control of the synthesis and turnover of membrane lipids including phosphoinositides; dynamics of membrane phospholipids in photoreceptor cells
Nicolas G. Bazan	<i>Professor of Ophthalmology, Neurology, and Biochemistry and Molecular Biology</i>	MD, 1965, D. Med. Sc., 1970, Tucuman University, 1970	Neurochemistry; membrane phospholipids in experimental models of retinal degenerative diseases, epilepsy, and stroke; biosynthesis of prostaglandins and of other eicosanoids; metabolism of docosahexanoic and arachidonic acids
Mary Breslin	<i>Assistant Professor of Pediatrics</i>	PhD, LSU Health Sciences Center, 1999	Small cell lung cancer; elucidate the role of a novel zinc finger transcriptional repressor protein, insulinoma associate-1 (IA-1) in SCLC in gene expression
Julia Cook	<i>Associate Professor</i>	PhD, North Carolina State University, 1986	Neural-specific gene regulation; applications of gene transfer to human disease; antisense and triplex technologies
John Doucet	<i>Associate Professor</i>	PhD, LSU Health Sciences Center, 1992	Genetic diseases in Louisiana populations; Acadian Usher syndrome; neurobiology of vision and hearing; genetic epidemiology of diseases; molecular anthropology of Louisiana populations
Jay Hunt	<i>Associate Professor</i>	PhD, University of Tennessee Health Sciences Center, 1990	Lipid second messenger signaling in differentiated vascular endothelial cells associated with tumor-induced angiogenesis; molecular epidemiology of cancer
Tadahide Izumi	<i>Assistant Professor of Otorhinolaryngology</i>	PhD, Radiation Biology, Kyoto University, 1989	DNA damage and mutagenesis, specifically those generated by reactive oxygen species; mechanisms of cellular defense and DNA repair against the DNA damage in human cells and other organisms
Shariar Koochekpour	<i>Assistant Professor of Microbiology, Immunology and Parasitology</i>	PhD, Experimental Neuro-Oncology, 1995	Neurotrophic protein (prosaposin) in cancer biology
Augusto C. Ochoa	<i>Associate Professor</i>	MD, Universidad de Antioquia, 1981	Alterations of signal transduction in T-cells of cancer patients and the development of immunotherapy in cancer
Madhwa H. G. Raj	<i>Professor of Obstetrics and Gynecology</i>	PhD, Indian Institute of Science, 1969	Testicular and ovarian function, contraceptive development, vitamin binding proteins in cancer, cancer chemoprevention / therapy
Donald Scott	<i>Visiting Associate Professor of Medicine</i>	PhD, Cell and Molecular Biology, St. Louis University, 1991	Nutrient control of cellular phenotype

X.Glossary of Terms

Department

Department of Biochemistry and Molecular Biology at Louisiana State University Health Sciences Center, New Orleans.

Director of Graduate Studies

A member of the Department of Biochemistry and Molecular Biology who heads the Departmental Graduate Committee.

Examining Committee

Committee of at least three faculty members responsible for administering graduate examinations. The PhD examining committees should be composed of five (or more) graduate faculty members: at least three faculty members with a primary appointment in the Department of Biochemistry and Molecular Biology and at least one faculty member from outside the Department. The MS examining committee is to be composed of two graduate faculty members from the Department of Biochemistry and Molecular Biology (one of whom has a primary appointment in the home department) and one graduate faculty member from another department.

Final Examination

Comprehensive examination taken as soon as one academic year or as late as three academic years after successful completion of the Preliminary Examination; includes the oral dissertation defense.

Graduate School

Term used to designate the division of the LSU Health Sciences Center School of Graduate Studies; usually refers to the Office of the Dean of the School of Graduate Studies.

Graduate Student Advisor

A member of the Department of Biochemistry and Molecular Biology who advises first year students on their plan of study.

Laboratory Rotation

Period of six weeks in which the student participates in research in a laboratory with the purpose of learning experimental methodologies with experts in the field and determining a Major Professor. Each student is required to make four such rotations before choosing a Major Professor.

LSU Health Sciences Center Catalog/Bulletin

Publication distributed by the LSU Health Sciences Center, which outlines the available courses offered by each department and states the minimum qualifications for a degree granted by the Health Sciences Center.

Major Professor

Faculty member of the Department who has reached a mutual agreement with the student to direct that student's research and offer advice on course scheduling until the completion of studies or until the student or the faculty member decides to terminate the association.

Preliminary Examination

A comprehensive examination, with oral and written components, focusing on the student's proposed dissertation efforts and taken in accordance with the rules and regulations stipulated in this manual.

Program of Study

Document prepared by the faculty of the Department describing courses required and suggested for completion of degree requirements.

Qualifying Examination

Comprehensive examination taken in accordance with the rules and regulations stipulated in this manual, which consists of oral and written components; successful completion of this examination is required prior to registration for Dissertation Research (BIOCH 400); a research proposal focusing on an area of experimentation unrelated to the proposed dissertation problem is defended.