

DEPARTMENT OF BIOLOGICAL SCIENCES
CALIFORNIA STATE UNIVERSITY, LONG BEACH

GRADUATE HANDBOOK

January 2009

This handbook was developed to give graduate students and faculty guidance in some of the processes associated with completing a M.S. degree in this department. This document is a **supplement** to the Degree Requirements listed in the current CSULB Catalog under University Requirements (in the front) and Departmental Requirements (in the Biological Sciences section). This handout is not an official document. Always follow the current CSULB Catalog if you find any discrepancies in requirement information, then contact the Department Graduate Advisor and Graduate Services Coordinator.

PERSONNEL

DEAN OF GRADUATE STUDIES - oversees all CSULB graduate programs; approves or disallows petitions to change or to grant waivers to the University and Department Graduate Degree Requirements as published in the CSULB Catalog.

COLLEGE OF NATURAL SCIENCES AND MATHEMATICS DEAN OF GRADUATE STUDIES - provides input to faculty and students concerning the degree program and University requirements.

DEPARTMENT OF BIOLOGICAL SCIENCES GRADUATE SERVICES COORDINATOR (Kay Belletti, PH1-215, (562) 985-7928, kbellett@csulb.edu) - oversees graduate application process; maintains graduate files; tracks the adherence of programs and student progress to Department and University requirements; serves as a resource person, and resolves problems.

DEPARTMENT OF BIOLOGICAL SCIENCES GRADUATE ADVISOR (Dr. Chris Lowe, PH2-017, (562) 985-4918, clowe@csulb.edu) - oversees the acceptance, proposal establishment, and completion processes; resolves problems between students and faculty, serves as final departmental quality control on the thesis.

THE FIRST YEAR

Listed below are the steps that need to be completed during the first year of your tenure here. If you have no identified course deficiencies in your acceptance letter, no GPA deficiency, have completed the GWAR, and met the GRE requirement when you were accepted, you may check these items off of the list.

- ___ PASS THE GRADUATION WRITING ASSESSMENT REQUIREMENT (GWAR)
- ___ COMPLETE COURSE DEFICIENCIES
(Recommend completion within the first year. A student cannot be Advanced to Candidacy until deficiencies are completed.)
- ___ 'A' or 'B' GRADES IN COURSES FOR GRADE POINT AVERAGE DEFICIENCY
- ___ ESTABLISH A THESIS COMMITTEE, OFFICIAL GRADUATE PROGRAM OF STUDY, AND THESIS PROPOSAL *(Pick up forms in the Dept. Graduate Office).*

FIRST-YEAR COURSEWORK

In consultation with a potential, or actual, Thesis Chair, and/or the Graduate Advisor, enroll in courses that match your general research area at the upper division level (300, 400, 500, or 600 numbers). Most courses that you take before you establish a formal Program of Study may be put on this program, up to a total of 12 units (a course taken to satisfy a deficiency may not be on the Program, but GPA probationary course can). See ESTABLISHING A PROGRAM OF STUDY below.

FINDING A THESIS CHAIR

As indicated in your acceptance letter, you should talk with the professors whose research interests best match your own about the possibility of working with them on a thesis project. Prior to starting the program, you are required to have chosen a thesis advisor. Early on in your studies you may find that you wish to work with someone else, and it is possible to change labs during your first semester. You should sign up for Directed Studies (BIOL/MICR 697) with your research advisor. This course allows you to learn what types of research are done in your research group and how you might fit into that program. It is also useful to talk to other graduate students about what the various faculty are doing, and who might have an opening for a new student.

FORMING A THESIS COMMITTEE

Once you have found a faculty member who has agreed to be your Thesis Chair, two additional members need to be selected. These members should have some interest and expertise in your research field so that they may constructively add to your research efforts. At least two members (including the Thesis Chair) must be tenured/tenure-track faculty from the Department of Biological Sciences; one or more additional members may be from outside of the department.

If the Thesis Advisor is from outside of the department, it is the responsibility of the student to ensure that the other committee members remain updated on progress. The Graduate Studies Committee may terminate a thesis committee if it is obvious that departmental faculty are not actively involved in the student's research program.

ESTABLISHING A PROGRAM OF STUDY

You and your Thesis Chair should fill in the "Graduate Program for the Master of Science" form obtained from the Department Graduate Office with a tentative list of courses; these will be discussed for approval at the first thesis committee meeting. Only one 300-level class, with an asterisk, is permitted on the M.S. in Biology Program of Study, and two specific 300-level courses may be included on a M.S. in Microbiology Program of Study. Refer to the CSULB Catalog for other university and departmental restrictions.

THE FIRST THESIS COMMITTEE MEETING TO ESTABLISH THE PROGRAM

Notify the Graduate Advisor of the proposed meeting date and provide her/him and all members of the Thesis Committee with a copy of your Thesis Proposal and a list of suggested courses for the program at least **one week prior** to the meeting (pick up forms in the Dept. Graduate Office, PH1-215.) The Graduate Advisor, your Thesis Committee, and you will meet together to listen to a 20-30 minute presentation by you of your proposed research, and then review and discuss your program and proposal. Towards the end of the meeting, the student will leave the room while the committee discusses the proposal, and decides whether it is acceptable.

THE THESIS PROPOSAL should include the following sections: an Introduction that contains a project summary and clearly indicates the Background, Significance and Specific Aims of the proposal, a Methods section detailed enough so that someone familiar with your specialty can discern the appropriateness of the Research Design and Methodology, a References Cited section, and a Budget page where the costs of the project are presented along with the sources of the necessary funds. A Preliminary Studies section may be provided if you have started working on your research. Please, double-space the proposal. **See section on *Writing a Thesis Proposal (pages 7-8)*.**

OFF CAMPUS RESEARCH - If the majority of the thesis research is to be conducted and supervised at an off campus site, the Thesis Proposal must clearly delineate the contributions by CSULB thesis committee members and the off-site personnel. Fiscal contributions must also be clearly identified as to source in the Budget.

THE PROGRAM OF COURSEWORK may include no more than 12 units taken prior to its establishment. In addition, only 6 units are permitted from a different college or university. Each program will contain the following courses; Research Design (BIOL 696A; 2 units), Scientific Communication (BIOL 696B; 2 units), Thesis (BIOL/MICR 698; 6 units), Directed Research (BIOL/MICR 697; 1-3 units). A minimum of 30 units must appear on the program, including seminar and thesis units; but you may take other courses that are relevant or that you find interesting. *See the current CSULB Catalog for more relevant information on course requirements.* The courses on the formal program may be changed at a later date if approved by your thesis committee. Note: the 6-year limit (a departmental rule) to the graduate program is referenced to the date of completion of the earliest completed course on this program.

FAILURE TO COMPLETE THESE FIRST-YEAR REQUIREMENTS BY THE END OF THE SECOND SEMESTER IN RESIDENCE WILL RESULT IN TERMINATION OF YOUR ACCEPTANCE INTO THE M.S. DEGREE PROGRAM.

SECOND AND THIRD YEAR

- ___ FINISH COURSES ON THE OFFICIAL GRADUATE PROGRAM.
- ___ SUBMIT "REQUEST TO GRADUATE" FORM at Enrollment Services (The preceding May 1 - October 15 for spring or summer graduation, and the preceding December 1 - March 1 for fall. (Dates appear in the *Schedule of Classes*).
- ___ FINISH THE RESEARCH AND COMPLETE THE WRITING (before the start of the graduation semester).
- ___ Graduate students are encouraged to attend all departmental seminars as part of their professional training.

RESEARCH PROGRESS UPDATES

You will be expected to email your committee and the Graduate Advisor (Dr. Lowe – clowe@csulb.edu) an update of your research progress each spring (May 31st), summer (Aug. 31st), and fall (Jan. 31st) period. These updates only need to be a brief paragraph describing what you have accomplished during that previous period. It is important to keep your committee informed with your progress and to continue to make satisfactory progress in your research. Make sure to use your committee members to help you when you get stuck.

ANNUAL REVIEW OF STUDENT PROGRESS

A progress review will be implemented when concerns about student progress are raised. The goal of the formal review is to: 1) ensure that a student progresses smoothly on their degree work, completing it about 2 years after their official MS degree program was established (Advancement to Candidacy). 2) To have problems with the scope and methods of the thesis research identified early and resolved in a timely fashion with input from the whole committee. 3) To provide the Department Chair with information used in making TA and GA assignments ("satisfactory progress on the degree" is one of the criteria).

If the degree has not been completed 6 years from when the first course on the program was completed, the student's MS degree program will be terminated.

Instructions for this review will be supplied to you at the time of the request.

MAINTAINING CONTINUOUS ENROLLMENT

Students who fail to maintain continuous enrollment must reapply to the University and to the Department of Biological Sciences for admission to the graduate program. Every semester, graduate students must be enrolled in a course, or in GS700 (must have

completed all courses on program), or must have an approved educational leave. Please refer to the CSULB Catalog for details.

LEAVES OF ABSENCE

In order for you to do research on your thesis, you must be registered at CSULB for each semester. If you must leave the university, you will need to file for an educational or medical leave of absence. Unapproved absences for two consecutive semesters will result in the invalidation of your formal program (refer to CSULB Catalog under University Requirements). You will need to request reinstatement into our graduate program from your Thesis Chair/Advisor and the Department's Graduate Studies Committee. You must also reapply to the University.

ACADEMIC PROBATION

Graduate students must maintain a 3.0 GPA in all courses taken while at CSULB (since the B.A./B.S.) and must have a 3.0 GPA in courses on the formal program (any course on the program with a grade lower than a "C" will not count for the M.S. Degree). Any student whose GPA falls below a 3.0 will have one semester to bring the GPA up to 3.0; failure to do so in next semester will trigger the termination of the program and disqualification. Disqualification will bar the graduate student from registering as a matriculated student at CSULB.

CHANGES IN THE THESIS OBJECTIVES OR COMMITTEE

The whole Thesis Committee must approve any major changes in the thesis proposal and a new proposal approval form needs to be filed with the Graduate Services Coordinator. It sometimes becomes necessary to change the thesis committee membership, including the Thesis Advisor. This normally is not a major problem; it requires a formal "Change of Program Form" and, perhaps, a new thesis proposal. Consult with the Graduate Advisor.

WRITING A THESIS PROPOSAL

There are no universal rules for writing a thesis proposal. The purpose here is to give you some insight into what is expected of you and your thesis research proposal. The outline shown below is very common and may be used for putting together your thesis research project proposal. However, check with your thesis chair because your chair may have specific reasons for you to use another format. *The thesis proposal should be double-spaced.*

Project Summary (1 page)

This is normally a one-paragraph abstract of the proposed project, including a brief mention of the specific aims and general comments on the scientific significance of the outcome of the project. *It is suggested that you write this section after writing the next four sections, as you will then have a more complete picture of the scope and nature of the work you are proposing as a thesis project.*

Specific Aims (1 page)

Describe 1-3 specific aims of the project. This section often consists of one paragraph, and it should be no more than one page in length. It begins with an introductory section that includes a clearly-written overall hypothesis, followed by a description of each specific aim given (often as *one* sentence each). It is a good idea to highlight (e.g., bold, italics, etc.) the words *Ahypothesis@* and *Aspecific aim@*.

Background and Significance (5-10 pages)

This is an important section of the proposal. It describes *background and details* about each of the specific aims given above. This section includes a more in-depth introduction of the scientific field at hand, it discusses how each of your particular specific aims fits into this field, and it emphasizes the significance, of your proposed research to the field of biology you are working in.

Preliminary data

In this section, describe the preliminary data you have obtained that led toward and support your proposed thesis research. In this section you will also demonstrate to your proposal reviewers (your committee) that you are *capable* of doing the project (you understand the necessary techniques, etc.). It is also very useful if you refer your readers to the particular specific aim for which the preliminary data are applicable.

Research Design and Methodology (5-10 pages)

This is the most important section of the proposal. Here you will describe the experiments you plan to do under each specific aim, focusing on the particular methods and techniques to be used. Be sure to include how data will be analyzed. You will also mention any collaboration you have with other scientists and how their work fits into your project.

References Cited

See the official Master's Thesis Format available in this handbook.

Budget

The budget is not meant to be an in-depth analysis of costs. Rather, it is meant to provide an approximation of the total costs of doing your thesis research. Work with your Thesis Advisor on advice on writing this brief budget.

Timetable

A realistic timetable should be included that describes when specific aims will be accomplished.

THESIS DEFENSE INFORMATION

Your Thesis Advisor should see a first draft approximately two months prior to the Public Defense to allow time for revisions.

- 1) Did you file a Request to Graduate with Enrollment Services for the appropriate semester/year?
Filing dates are listed in the *Schedule of Classes*. (Deadlines are established each year, and there is no flexibility with the Library deadlines.)
- 2) You must be registered for a course, or GS700, during the term you graduate. Stop by Kay's office before registration ends during your last semester (or two) here. This is so we can review your Graduate Program of Study to be sure you have actually completed all of your required courses!
- 3) **Public/Private Thesis Defense:** Schedule a date/time for your Thesis Defense with your Thesis Committee early in the semester. Let Kay know (one month notice) the date/time of your Defense so that she can schedule room(s), post flyers (*please email your current thesis title to Kay at this time*), notify faculty/students, and prepare a sign-off form. The Thesis Committee and the Department Graduate Advisor must be in attendance.
- 4) The thesis must be given to your thesis committee three weeks prior to the defense. **Committee Members should read thesis and provide feedback to student within one week of receipt of thesis so that student has time to respond to feedback prior to the defense.** The Thesis Defense will begin with a public presentation by the student followed by questions from the audience. The student and thesis committee will then hold a private in-depth discussion and defense of research findings, culminating with a decision by the thesis committee to approve or not approve the thesis. The student may not defend the thesis during the summer or winter terms.
- 5) Students failing to meet the criteria for thesis approval will need to meet with their committee to discuss the revisions and procedures necessary for the successful resubmission of their thesis.
- 6) After the approval of the thesis defense by the Thesis Committee, it is likely that corrections and final formatting for the library will need to be done. Your Thesis Advisor will need to approve changes, and in some cases changes will need to be approved by members of your thesis committee as well. When the thesis is ready for submission to the library, it must be reviewed by the Department Graduate Advisor. A form indicating approval from the Department Graduate Advisor (*Department/Safety Office Clearance Form*) is available from Kay.

Graduate students should consider the following guidelines when preparing for their thesis defense:

- All thesis committee members must be present at a thesis defense.
- All thesis committee members and the graduate advisor must receive a copy of your thesis at least **three** weeks before your thesis defense date.
- Thesis committee members are busy and may be unavailable on short notice. DO NOT put off planning your thesis defense until the week before the departmental thesis deadline. If a member of your committee is not available, you will be forced to delay graduation. Arrange your defense date well ahead of the departmental deadlines.
- The library thesis deadlines are absolute. You will not receive an extension on the thesis submission deadline for any reason.
- Secure CNSM Safety Office “Clearance” after clean-up of project materials (pick up form from Kay—*Department/Safety Office Clearance Form*).

After revisions are made, and the thesis is in the correct library format, the thesis is shown to the Graduate Advisor for final approval prior to submission to the Thesis Office. It is your responsibility to be certain that your thesis is formatted correctly! Submit thesis in final form to the Library Thesis Reviewer; revise the thesis in light of comments by the Thesis Reviewer. Submit the thesis to the Departmental Chairperson for final review and signature. Once you have the Chair's approval, take the thesis to the Copy Center. Contact the Library Thesis Reviewer with your receipt number. After the Thesis Reviewer has your receipt number, a letter of "Library clearance" will be sent to you, your Thesis Advisor, and the Graduate Services Coordinator. After this letter is received, the "Change of Grade Form" for thesis units will be submitted.

THE KEY TO ACCOMPLISHING THESE STEPS WITH MINIMUM STRESS IS TO HAVE THE DRAFT THESIS APPROVED BY YOUR THESIS CHAIR BEFORE THE START OF THE SEMESTER IN WHICH YOU WISH GRADUATE.

THESIS PREPARATION

The thesis should be written as if for publication in a scientific journal in your research field. The thesis should have fewer than 100 pages; remember not everything that is done on a project necessarily needs to go into the publication. Be sure to refer to the thesis preparation guidelines available on the Library web site. Just referring to a recently bound thesis is not enough guidance. The "Literature Cited" section must be formatted according to departmental guidelines.

Remember that you took "BIOL 696 - Scientific Communication" where you learned how to present information in an organized, coherent fashion. Review your notes and efforts in that class, especially the advice on how to write captions for Figures and Tables.

THE SIX YEAR LIMIT

If you have not finished your program by the end of the 6th year (including official and unofficial leaves of absence) since you completed the first course on your program, your program will be terminated. You will receive a warning of this very important impending deadline during your 5th year. Talk to the Graduate Advisor or Graduate Services Coordinator if you do not understand this paragraph!

THESIS OFFICE WEB-SITE

The Library Thesis Office has a web-site that you can review for thesis information, library deadlines, etc. Go to www.csulb.edu/library/guide/serv/thesis.html.

WARNINGS CONCERNING THE THESIS REVIEW DONE BY THE LIBRARY

The Library expects to review a perfect thesis in terms of format, punctuation, and grammatical usage. You must pay attention to the material from the Library Reviewer on format; your committee and you should have corrected the other items.

In the "LITERATURE CITED" section, YOU must make certain that every citation in the text is correct and is listed in the "LITERATURE CITED" section AND that all listed references are, in fact, cited in the text. Print out a separate Literature Cited section, and mark off references as you go through your thesis.

If at any point in the review the Graduate Advisor feels that you have not done an adequate job preparing the thesis for the final review process, the Graduate Advisor will cease reading it and return it to your Thesis Committee Chair. If this delay means that you miss the library deadline, you will have to postpone your graduation.

Department of Biological Sciences

Style Guidelines for Literature Cited for Masters Theses

In Endnote, choose Developmental Dynamics for this formatting.

This format was chosen because it is simple with few periods, bolds, and italics. After looking at many journals in many different fields of Biology, it is clear that there is no standard format.

Journal Articles

Litingtung Y, Dahn RD, Li Y, Fallon JF, Chiang C. 2002. Shh and Gli3 are dispensable for limb skeleton formation but regulate digit number and identity. *Nature* 418:979-983.

Ben-Ze'ev A, Robinson GS, Bucher NL, Farmer SR. 1988. Cell-cell and cell-matrix interactions differentially regulate the expression of hepatic and cytoskeletal genes in primary cultures of rat hepatocytes. *Proc Natl Acad Sci USA* 85:2161-2165.

Book Chapters

Kiernan AE, Steel KP, Fekete DM. 2002. Development of the mouse inner ear. In: Rossant J, Tam PPL, editors. *Mouse Development*. San Diego: Academic Press. p. 539-566.

Books

Gilbert SF 2000. *Developmental Biology*. 5th Edition. Sunderland, Massachusetts: Sinauer Associates, Inc. 749 p.

Web Sites

Provide the URL as completely as possible in the following format. Be sure to test that the URL works when pasted directly into Mozilla or IE. Also include date last modified, date visted (retrieved is the preferred term of the thesis office), and the author, if known. The date last modified is usually at the bottom of a web page.

<http://www.arabidopsis.org/info/guidelines.jsp#locus> (last modified: January 27, 2005; retrieved: March 7, 2006; author, if known, would go here)

Within the body of the text:

1 author
(Meyer, 2001)

2 authors
(Knoepfler and Eisenman, 1999)

3 or more authors
(Xong et al., 2004; <http://www.arabidopsis.org/info/guidelines.jsp#locus>)
Multiple citations are separated by a semicolon.