

The University of Memphis

Graduate Advising Handbook

**College of Arts and Sciences
Department of Biology**

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Note: This handbook is available on-line at: <http://biology.memphis.edu/>

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INTRODUCTION

Welcome to the Department of Biology at the University of Memphis. This booklet will answer many of your questions about our graduate program in biology and contains all the forms and timetables required for completion of your program. Keep it in a safe place and check the timetables periodically. Students should read the Graduate Bulletin for additional entrance requirements for each degree.

The full-time faculty members in the department have diverse interests covering most of the major fields of biology and taxa of organisms. The Department of Biology offers programs that lead to both the Master's (thesis and non-thesis) and Doctorate degrees. Details about admission and degree requirements are presented in the sections below.

Many Graduate School forms must be completed before, during, and at the end of your program in the Department of Biology. **A copy of each form submitted to the graduate school must be submitted to the graduate coordinator and placed in your file (it is also suggested that you keep a copy for your personal files and give a copy to your major advisor).** The forms are listed after each section and are included at the end of this booklet. Graduate school forms are also available on the University of Memphis web page (www.people.memphis.edu/~gradsch/forms1.html).

All students must meet with the Coordinator of Graduate Studies by April of every year to assess progress made toward their degree goals! It is the responsibility of each student to schedule this meeting. The form for this meeting is in the appendix.

NOTICE: Each student is responsible for reading and following the requirements set forth herein and in the Graduate School Bulletin. Departmental policies for all deadlines and examinations must be satisfied.

GENERAL REQUIREMENTS FOR ADMISSION TO GRADUATE STUDY IN THE DEPARTMENT OF BIOLOGY

Persons wishing to work toward a graduate degree (Master of Science [M.S.] with thesis or non-thesis or Doctor of Philosophy [Ph.D.]) in Biology must apply for admission to the Graduate School and the Department of Biology of the University of Memphis. It is essential that applicants for any of the degree options listed below apply to both the Graduate School *and* the Department of Biology. Acceptance by the Graduate School does not necessarily indicate acceptance by the Department. The application procedure for the Graduate School can be found at: (<http://academics.memphis.edu/gradschool/>).

All applicants must submit the following directly to the Department of Biology:

- (1) A written letter from a prospective advisor within the Department of Biology that states that he/she will accept the applicant and how the student will be funded while in the program. This is a critical first step; no applicant will be accepted to the Department without an advisor. Faculty research interests are listed on the Departmental website, and you are encouraged to interact directly with those faculty who have research interests matching yours.
- (2) Copies of all college transcripts (these can be unofficial copies). Note that International students whose transcripts are not in the standard US format (i. e., A, B, C, D, & F on a four-point scale in which an A = 4 pts.), must have transcripts evaluated before submitting to the Dept. of Biology. World Educational Services (<http://www.wes.org>) provides this service for a fee.
- (3) Copies of Graduate Records Examination scores (GRE - only the General test is required; these can be unofficial copies)
- (4) Two letters of recommendation from professors or others that can speak of the applicant's academic abilities and potential.
- (5) A statement of interests and goals by the applicant that includes which degree they wish to pursue (MS, MS-non-thesis, or PhD) and in which term they wish to enroll.
- (6) **International Students** for which English is not their native language must submit proof that they have taken both the Test of English as a Foreign Language (TOEFL: acceptable minimums are 550 for paper-based and 210 for computer-based exams). If an international students desire a Graduate Teaching Assistantship (i. e., wish to be supported by the department) they must submit results from a test that certifies they are competent in spoken English. This can be satisfied by the Test of Spoken English (a score of 50 is the minimum accepted) or the spoken English component of the TOELF iBT (a score of 26 or above is required). All exams are available from the Educational Testing Service at <http://www.ets.org>.

A personal visit to the department is strongly encouraged; however, it is not required before admission. **Applications will not be considered by the Department of Biology until a complete file containing the above materials has been compiled.**

The Biology Department prefers that students begin in the fall, though in some cases a student may be accepted for the spring term. Students wishing to be considered for a Graduate Teaching Assistantship (GTA) for support must apply by 1 February; however, because some

important funding sources have a February deadline, we recommend that students apply as early as possible. Applicants who will not be supported through a departmental GTA must apply no later than 15 June for consideration for fall admission. Applicants for spring semester admission must apply by 15 October. Generally, spring GTAs will not be available to students applying for spring admission, although they may apply for a GTA in subsequent terms. Applicants who fail to apply by the above stated deadline, may take courses as an undeclared major and up to nine credits may be applied to their graduate degree **if** they are accepted when their completed applications are reviewed by the Graduate Studies Committee.

Note: the Biology Department deadlines are considerably earlier than those of the Graduate School. It is essential that you apply in a timely manner to both the Department of Biology and the Graduate School to assure that your materials reach the Department of Biology by the above dates. **Acceptance by the Graduate School does not guarantee acceptance into the Department of Biology's graduate program.**

MASTER OF SCIENCE DEGREE

REQUIREMENTS FOR MS DEGREE IN BIOLOGY

ADMISSION

The MS program is normally open only to students who hold a Bachelor of Arts (BA) or Bachelor of Science (BS) degree in Biology or a related field from a recognized institution. Note that seniors that are in the final term of their undergraduate program with a very good record to date will also be considered. There are two options for the Master's degree in the Department of Biology: (1) The Master's degree requiring a thesis is designed for those students who plan to continue work toward a doctorate or who are otherwise interested in research and (2) The **non-thesis** Master's degree is for students who expect the Master's to be a terminal degree in biology.

Applicants must submit scores for the Graduate Record Examination (GRE). A combined score of at least 1000 on the Verbal and the Quantitative portions (the minimum acceptable score on either portion is usually 400) of the GRE is generally considered competitive for admission. An overall minimum grade point average of 2.75 at the undergraduate level is required. A personal visit to the department is encouraged; however, it is not required before admission. It is critical that applicants submit all of the materials listed (see points 1 - 5 above) in the General Requirements for Admission section to the Coordinator of Graduate Studies of the Department of Biology. Applications that do not include all of the requested materials will not be considered. Admission to the MS program of the Department of Biology will be determined by the departmental Graduate Studies Committee. **Meeting entrance requirements for admission does not guarantee acceptance into the program.**

Applicants must have satisfactorily completed (“C” or better) three of the following six upper division courses or their equivalents: **BIOL 3050 (Ecology), BIOL 3072 (Genetics), BIOL 3130 (Cell Biology), BIOL 3500 (Microbiology), BIOL 3730 (Physiology), BIOL 4100 (Evolution).**

Applicants must have satisfactorily completed five of the following nine courses or their equivalents: **CHEM 1110 (General Chemistry I), CHEM 1120 (General Chemistry II), CHEM 3311 (Organic Chemistry I), CHEM 3312 (Organic Chemistry II), CHEM 4511 (Biochemistry), PHYS 2010 (Physics I), PHYS 2020 (Physics II), MATH 1910 (Calculus), MATH 1601 (Statistics)**. Other courses in the sciences may substitute for these requirements.

Applicants must also apply for admission to the Graduate School (see the Graduate School website <http://academics.memphis.edu/gradschool/>) for details. **Meeting Graduate School requirements for admission does not guarantee acceptance into the Department's graduate program.**

ADVISORY COMMITTEE

During the first year in the program, the student and their advisor will form an Advisory Committee of at least three voting members (for a minimum of three). A majority of the Committee must be members of the graduate faculty from the Department of Biology of the University of Memphis. At least three voting members of the student's Committee must be physically present for the following meetings: Planning of coursework, Prospectus proposal (not applicable for non-thesis MS), and Final Examinations (written and/or oral). Students should meet with their Advisory Committee each semester and are required to meet with it at least once a year.

PROGRAM REQUIREMENTS

MASTER'S DEGREE (THESIS)

A minimum of 30 semester hours beyond the baccalaureate degree is required. A minimum of 18 semester hours must be taken in residence. Seventy percent of the total of 30 semester hours (i. e., a minimum of 21 hrs.) must be at the 7000 level or above is required with a minimum of 12 hours in the major. The student's Advisory Committee may require additional courses. A grade point average of 3.0 must be maintained. Continuation of a student who fails to reach a 3.0 overall GPA during two semesters while in the graduate program is at the discretion of the Graduate Studies Committee (in consultation with the student's Advisory Committee). A student must make at least a "B" on any graduate course required by the Department of Biology or the student's Advisory Committee. A student is allowed to repeat graduate courses only one time and no more than two courses may be repeated. Approval to repeat a course must be obtained from the Department Chairperson, the College Director of Graduate Studies and Research, and the Graduate School Dean.

Courses Required by the Department of Biology for all MS (thesis) students:

Biology 7000 (Orientation to Graduate Studies), 7004 (College Biology Teaching), 7092 (Research), 7200 (Seminar in Biology – presentation of research proposal and research progress updates), 7600 (Seminar in Biology –thesis presentation), and 7996 (Thesis) are required. Biology 7000 is required during the first or second semester in residence. Biology 7600 is an oral presentation of the student's research and is usually presented during the last

semester in the program. Up to six credit hours of Biology 7092 (Research), three credit hours of Biology 7200 (Seminar in Biology), and six credit hours of Biology 7996 (Thesis) may be used to meet degree requirements.

Attendance at department seminars is mandatory.

A **research prospectus** (see pages 20-21 for format), presented to the full graduate faculty orally and a written version signed by the members of the Advisory Committee, must be completed by the end of the second semester in residence. **The prospectus must be approved prior to data collection.** The signed prospectus must be kept on file in the departmental office. The prospectus may be amended with the approval of the Advisory Committee no later than one semester before the thesis is to be completed.

Students seeking the Master's degree must submit a petition to the Chairperson of the Department of Biology and subsequently to the Graduate School requesting approval of candidacy. Approval by the Departmental Chairman will be based on the following:

- A. Satisfactory completion of 12 semester hours of graduate work.
- B. Formation of an Advisory Committee and convening an initial meeting.
- C. Completion of any prerequisite undergraduate requirements.

A **final oral presentation** of the student's research thesis (Biology 7600) will be announced and will be open to the public. A written abstract and summary of the presentation will be distributed to all faculty members at least seven days prior to the oral presentation.

After the final oral presentation, the student's Advisory Committee will conduct a **Final Oral Examination**. This examination should be conducted as soon after the public presentation as possible. The examination will focus on questions related to the student's area of research and specialization. The student's Advisory Committee will evaluate the student's performance on the examination as follows:

Full Pass

All Committee members voting pass.

Conditional Pass

An agreement by the Committee that the student has neither failed nor satisfactorily passed. Remedial conditions must be stipulated by the Committee and may include either further course work or a retaking of a portion or portions of the exam. In the former case, the courses and final grade required must be designated in writing. In the latter case, a time for re-examination (no less than one month) will be determined by the student and the Committee. In either case, a failure to complete the agreed upon requirements will signify that the entire examination has been failed and must be retaken as noted under "Full Fail".

Full Fail

One or more of the Committee voting fail. The student may retake the entire examination only once. A time for re-examination (no less than one month from the date of the first examination) will be determined by the student and the Committee.

A **thesis** is required of all candidates for this Master's degree. Six (6) hours of thesis credit (Biology 7996) must be scheduled during the graduate program. The student's Advisory Committee must approve the topic, prospectus, and the written thesis. The thesis should be prepared and presented to the Advisory Committee in the following manner:

- A. Write and revise under the direction of the major professor in consultation with the Advisory Committee. Usually this requires several drafts. The finished draft will be submitted to the major professor for detailed criticism.
- B. Revise incorporating suggestions made by the major professor and obtain major professor's approval.
- C. Submit the revised draft of the thesis to the Advisory Committee for critical review. This draft must be submitted at least six weeks before the deadline for submission of theses to the Graduate School. The Advisory Committee will have two weeks to edit and comment on the draft. The student and their advisor are responsible for eliciting a response from each Committee member.
- D. Revise the thesis incorporating suggestions made by the Advisory Committee. This will entail submission of rewritten drafts until each Committee member is satisfied with the thesis. Committee members must be given at least two weeks to read the final thesis.
- E. Obtain approval of the Advisory Committee on the corrected draft.
- F. Prepare final copies of thesis in accordance with Graduate School and departmental regulations regarding form, size of type, method of reproduction, and number of copies required. See U of M booklet on Graduate School Policies Concerning Thesis and Dissertation and details of form and style used by major journals in the student's research area (also available at the University of Memphis web page: <http://academics.memphis.edu/gradschool/>). The specific style will be determined in consultation with the major professor and Committee members. The candidate is responsible for proof-reading and correcting all copies to be submitted to the Graduate School. The original is to be submitted to the Graduate School. One copy is required for the library, and another copy is submitted to the Department of Biology.

The final copies of the thesis must be distributed to the Advisory Committee one week before the final thesis defense. All copies of the signed thesis must be in the Graduate Office two weeks before graduation. In addition to the three required copies, a bound copy will be given to the major professor and an unbound copy to each member of the graduate Committee (if requested by the individuals involved). Other copies are at the student's discretion.

Students are strongly encouraged to present papers and posters at professional meetings and to publish papers in peer reviewed scientific journals during tenure for the Master's degree.

A graduate degree is not awarded solely because the student completes a prescribed number of courses. Graduate degrees are awarded, based on the judgment of the

Advisory Committee and the Graduate Faculty, to students who have shown a level of professional competency and creativity deserving of the graduate degree. Upon successful completion of all degree requirements, the Department Chairman and the Advisory Committee will recommend the awarding of the Master's degree by the Graduate School.

MASTER'S DEGREE (NON-THESIS)

A minimum of 36 semester hours of graduate course work is required. The total number of semester hours required for graduation will be determined by the student's Advisory Committee based on academic background. No more than three semester hours can be satisfied by Biology 7092 (Research). Seventy percent of the total hours taken must be at the 7000 level or above with a minimum of 12 hours in the major. A grade point average of 3.0 must be maintained. A student whose grade point average drops below 3.0 will have one semester to raise his/her GPA to 3.0 or better. Continuation of a student who fails to reach a 3.0 overall GPA during two semesters while in the graduate program is at the discretion of the Graduate Studies Committee (in consultation with the student's Advisory Committee). A student must make at least a "B" on any graduate course required by the Department of Biology or the student's Advisory Committee. A student may repeat a graduate course only one time. Only two courses may be repeated. Approval to repeat a course must be obtained from the Department Chairman, the College Director of Graduate Studies and Research, and the Dean of the Graduate School.

Courses Required by the Department of Biology for all MS (non-thesis) students: Biology 7004 (College Biology Teaching), and Biology 7200 (Seminar in Biology – Note: even though the MS-NT student will not present a research prospectus, enrollment, attendance, and participation are required).

Attendance at departmental seminars is mandatory.

Students seeking the Master's degree must submit a petition to the Chairman of the Department of Biology and subsequently to the Graduate School requesting approval of candidacy. Approval by the Departmental Chairman will be based on the following:

- A. Satisfactory completion of 12 semester hours of graduate work.
- B. Formation of an Advisory Committee and convening an initial meeting.
- C. Completion of any prerequisite undergraduate requirements.

A graduate degree is not awarded solely because the student completes a prescribed number of courses. Graduate degrees are awarded, based on the judgment of the Advisory Committee and the Graduate Faculty, to students who have shown a level of professional competency and creativity deserving of the graduate degree.

CHANGE IN MS DEGREE PROGRAM

Students wishing to make the transition from the MS to PhD program prior to completing the MS degree must:

- 1) Submit a statement to the Graduate Studies Committee (GSC) that details the student's reason for wishing to make the change. The statement should set forth the student's accomplishments that merit making such a change.
- 2) The student must submit a short (1 - 3) page proposal that offers some detail of the proposed research project. This short proposal must briefly set forth the background underlying the project, the hypothesis or question being addressed, predictions that the hypothesis generates and the proposed methods to test these predictions, and the possible outcomes of the research.
- 3) The student's major professor must submit a letter supporting the student's proposed change.
- 4) The student must solicit, and subsequently submit, at least two written statements from other members of the graduate faculty in support of the proposed change.
- 5) Materials must be received by the GSC by 15 March for consideration for the following academic term. No mid-year changes will be considered.
- 6) The student must have at least a 3.5 grade point average (GPA) for graduate course work that has been completed at the University of Memphis.
- 7) The student's general Graduate Record Exams (GRE) scores and undergraduate GPA must meet the criteria established for a student to gain direct admission to the PhD program with a BA or BS degree (see p. 14).

Petitions to change programs will be considered at the same time as new applications for the following year. Even though a student meets the above requirements, this does not guarantee that a student will be allowed to change programs.

Changing programs from thesis to non-thesis and the reverse is strongly discouraged. This will only be allowed after the student has met his/her initial obligation (e.g., collection of data, completion of reports, presentation at meetings, or other) to the major professor and department, as well as to any funding agency that might be involved in the student's program. Such changes require a petition from the student to the Graduate Studies Committee (GSC). Following a review of the request and consultation with the major professor and, in appropriate cases, the funding agency, the GSC will act on the petition. The student may be called for a personal interview with the GSC. Early graduation rarely results from switching graduate programs.

It should be noted that the Department of Biology does not normally provide financial support for non-thesis students. Therefore, students with teaching or research assistantships will likely lose this support if they change from the thesis to non-thesis program.

CHANGE IN ADVISORY COMMITTEE

A graduate student may change the composition of the Advisory Committee responsible for direction of his/her graduate program (including the major professor); however, any change in the Advisory Committee composition must be approved by the Graduate Studies

Committee. Normally, this change will present few problems if the change is made early in the student's career. To change membership of the Advisory Committee, the student will complete the proper Graduate School form (<http://academics.memphis.edu/gradschool/forms1.html>) and petition the GSC for approval of the change. If changes are made after the student has finished most of the course work, presented the 7200 or 7600 seminar, or taken the comprehensive examinations, changing the composition of the Committee may lead to a delay in graduation. Requests for change in Advisory Committee membership late in a student's program are strongly discouraged. Rules that apply to committee changes are:

- A. The new Advisory Committee may recommend additional course work.
- B. The student will be required to take the Final Examination from the Committee as constituted at the time of graduation. Therefore, if the student has taken the comprehensive examination and subsequently changes the membership of the Committee, the student may be required to take the examination from the new members.
- C. If the thesis research has been previously presented in a Biology 7600 seminar and has been scored satisfactorily, the student may be required to present an additional seminar to the faculty. This presentation will include any additional research required by the new membership of the Advisory Committee.

DOCTOR OF PHILOSOPHY

REQUIREMENTS FOR THE Ph.D. IN BIOLOGY

ADMISSION

Applicants with a Bachelor's degree but not a Master's degree: A combined score of at least 1100 on the Verbal and the Quantitative portions of the GRE is generally considered competitive for admission (the minimum acceptable score on either portion is usually 500). An overall minimum grade point average of 3.00 at the undergraduate level is required. A personal visit to the department is encouraged; however, it is not required before admission. It is critical that applicants submit all of the materials listed (see points 1 - 5 above) in the General Requirements for Admission section to the Coordinator of Graduate Studies of the Department of Biology. Admission to the Ph.D. program of the Department of Biology will be determined by the departmental Graduate Studies Committee. **Meeting entrance requirements for admission does not guarantee acceptance into the program.**

Applicants with a Master's degree: Applicants must submit transcripts from the institution from which they received their graduate degree and the materials listed in the General Requirements for Admission section (see points 1 - 5 above) to the Coordinator of Graduate Studies in the Department of Biology. Applications that do not include all of the requested materials will not be considered. Admission to the Ph.D. program of the Department of Biology will be determined by the departmental Graduate Studies Committee. **Meeting entrance requirements for admission does not guarantee acceptance into the program.**

All applicants must have satisfactorily completed (“C” or better) four of the following six upper division courses or their equivalents: **BIOL 3050 (Ecology)**, **BIOL 3072 (Genetics)**, **BIOL 3130 (Cell Biology)**, **BIOL 3500 (Microbiology)**, **BIOL 3730 (Physiology)**, **BIOL 4100 (Evolution)**.

All applicants must have satisfactorily completed seven of the following nine courses or their equivalents: **CHEM 1110 (General Chemistry I)**, **CHEM 1120 (General Chemistry II)**, **CHEM 3311 (Organic Chemistry I)**, **CHEM 3312 (Organic Chemistry II)**, **CHEM 4511 (Biochemistry)**, **PHYS 2010 (Physics I)**, **PHYS 2020 (Physics II)**, **MATH 1910 (Calculus)**, **MATH 1601 (Statistics)**. Other courses in the sciences may substitute for these requirements.

Applicants must also apply for admission to the Graduate School (see the Graduate School website <http://academics.memphis.edu/gradschool/> for details of the application procedure).

ADVISORY COMMITTEE

During the first year in the program, the student and their advisor will form an Advisory Committee of at least four additional voting members (for a total of five). A majority of the Committee must be members of the graduate faculty from the Department of Biology of the University of Memphis (Note: At least four voting members must be physically present at each of the following meetings: Planning of coursework, Prospectus proposal, and Final Examinations [written, oral, or both]). At least one of these members must be from outside the student's major area of study. Members may be from outside the Department if they have adjunct standing at the University.

SWITCHING FROM Ph.D. TO MASTER'S DEGREE

If a student admitted into the Ph.D. program fails to complete the requirements for the Ph.D., the student may be granted a Master's degree upon successful completion of the requirements for that degree (see M.S. requirements). Granting of the Master's in lieu of the Ph.D. must be approved by the student's Advisory Committee and the Graduate Studies Committee.

REQUIREMENTS FOR THE Ph.D. PROGRAM

A minimum of three academic years (72 credit hours) beyond the baccalaureate degree is required. A student entering the Ph.D. program with a M.S. degree will be awarded 30 semester hours toward the 72 hours required. A minimum of 30 graduate semester hours must be taken in residence. The student should have a major area of specialization with a sufficient diversity in course work to insure a breadth in training. Course requirements are determined by the Advisory Committee in conjunction with the student before the end of the second semester in residence. A grade point average of 3.0 must be maintained. Continuation of a student who fails to reach a 3.0 overall GPA during two semesters while in the graduate program is at the discretion the Graduate Studies Committee (in consultation with the student's Advisory Committee). A student must make at least a "B" on any graduate course

required by the Department of Biology or the student's Advisory Committee. A student is not allowed to repeat a graduate course more than one time. Only two courses may be repeated. Approval to repeat a course must be obtained from the Department Chairman, the College Director of Graduate Studies and Research, and the Graduate School Dean.

Courses Required by the Department of Biology for all PhD students:

Biology 8000 (Orientation to Graduate Study), 8004 (College Biology Teaching), 8092 (Research), 8103 (Prospectus Proposal and Defense), 8200 (Seminar in Biology), 8600 (Seminar in Biology – public dissertation defense), and 9000 (Doctoral Research and Dissertation) are required. Biology 8000 is required during the first or second semester in residence. The oral seminar component of Biology 8103 must be presented to the Department by the sixth semester in residence: the written component of BIOL 8103, the Prospectus Proposal, must be passed by the student's Advisory Committee during the same semester. Biology 8600, an oral presentation of the doctoral research, is part of the final examination in defense of the dissertation is presented during the last semester in residence (see Final Examination). Up to nine credit hours of Biology 8092 (Research), five credit hours of Biology 8200 (Seminar in Biology), and 18 credit hours of Biology 9000 can be counted toward the degree requirements.

Attendance at department seminars is mandatory.

Foreign language proficiency - Students are required to demonstrate competence in a foreign language and/or research tool area. Specific requirement(s) is (are) determined by the student's Advisory Committee.

ADVANCEMENT TO Ph.D. CANDIDACY

The process of becoming a Ph.D. Candidate is a two step process that must be completed by the end of the third year.

1) Research Prospectus (see appendix for format): The prospectus should be completed and signed by the members of the Advisory Committee as early in the student's program as possible and must be approved prior to data collection. The written **Prospectus (BIOL 8103)** should be submitted in a format that is appropriate for the student's sub-discipline (e. g., an NIH, NSF, EPA, or USDA grant or an appropriate state or federal agency contract). The student will subsequently orally present the proposed research to the department. The signed prospectus must be kept on file in the Departmental office. The prospectus may be amended with the approval of the Advisory Committee no later than one semester before the thesis is to be completed.

2) Specialized Knowledge Examination: After successful completion of the written prospectus and its oral presentation, the student should schedule the Specialized Knowledge Examination. The examination will be scheduled in consultation with the student's Advisory Committee and will consist of a written and/or an oral component. A maximum of one day per evaluating Committee member

will be available for the written examination. The entire written examination must be completed within one 10-day calendar period. Committee members will grade their own questions, but members are encouraged to read all sections of the examination. In the event that the student's Advisory Committee requires both a written and an oral component of this exam, the oral examination will be conducted by the student's Advisory Committee within two weeks of completion of the written examination (unless a request for extension is submitted by the student or major professor and approved by the Coordinator of Graduate Studies). Guests may be invited to participate in the oral examination at the discretion of the Advisory Committee. The Committee will evaluate the performance on the entire examination as follows:

Full Pass

All Committee members voting pass.

Conditional Pass

The Committee agrees that the student has neither failed nor satisfactorily passed the exam. Conditions for rectifying this may include further course work, retaking of a portion or portions of the exam, or both. If the former, the courses and final grade required must be designated in writing. If the latter, a time for re-examination (no less than one month) will be determined by the student and the Committee. In either case, failure to complete the requirements at the first attempt will signify that the entire examination has been failed and must be retaken as noted under Full Fail.

Full Fail

Two or more of the Committee voting fail. The student must retake the entire examination. A time for re-examination (no less than one month) will be determined by the student and the student's Advisory Committee.

Following completion of the above two steps, students must submit a petition through the Chairman of the Department of Biology to the Graduate School for the approval of candidacy. Approval of candidacy by the Departmental Chairman will be based on satisfactory completion of the Specialized Knowledge Examinations and the Research Prospectus.

DISSERTATION

A **dissertation** will be required of all candidates for the doctoral degree. Eighteen (18) hours of dissertation credit (Biology 9000) must be scheduled during the graduate program. Once a student has signed up for dissertation credit, he/she must sign up for at least one credit in each subsequent semester until graduation. The student's Committee must approve the topic, prospectus, and the final dissertation. The dissertation must show a mastery of the techniques of scientific research, and it must be a distinct and new contribution to the body of scientific knowledge. At least a portion of the dissertation or other research must be accepted for publication in a nationally or internationally peer reviewed journal that is acceptable to the Advisory Committee (see Publications section). Students are encouraged to present papers at professional meetings and to publish in scientific journals. The dissertation should be prepared and presented to the Advisory Committee in the following manner:

- A. Write and revise under the direction of the major professor in consultation with the Advisory Committee. The completed draft will be submitted to the major professor for detailed criticism.
- B. Revise considering suggestions made by the major professor and obtain major professor's approval.
- C. Submit revised draft of the dissertation to the Advisory Committee for critical review. This draft must be submitted to the Committee at least six weeks prior to the deadline for submission of dissertations to the Graduate School. Committee members must be given at least two weeks to read the dissertation.
- D. Rewrite as necessary incorporating suggestions made by the Advisory Committee members. This will entail submission of rewritten drafts until each Committee member is satisfied with the dissertation.
- E. Obtain approval of the corrected draft by all Committee members.
- F. Prepare final copies of the dissertation in accordance with Graduate School and departmental regulations as to form, size of type, method of reproduction, and number of copies required. See U of M booklet on Graduate School Policies Concerning Thesis and Dissertation (also available on Graduate school web page: www.people.memphis.edu/~gradsch/forms1.html) and details of form and style used by major journals in the student's research area. The specific style will be determined in consultation with the major professor and Committee members. The candidate is responsible for proof-reading and correcting all copies to be submitted to the Graduate School. The original is to be submitted to the Graduate School. One copy is required for the library, and another copy is submitted to the Department of Biology. The final copies of the dissertation must be distributed to the Advisory Committee one week before the final thesis defense. All copies of the signed thesis must be in the Graduate Office two weeks before graduation. In addition to the three required copies, a bound copy will be given to the major professor and an unbound copy to each member of the graduate Committee (if requested by the individuals involved). Other copies are at the student's discretion.

DISSERTATION DEFENSE AND FINAL ORAL EXAMINATION

The Final Examination (BIOL 8600) will be an oral defense of the dissertation. The examination will be announced and open to the public, but the Advisory Committee will decide the results of the examination. Following adjournment of the public dissertation defense, a Final Examination will be conducted by the student's Advisory Committee. No more than one dissenting vote is permissible to pass the examination. The Final Examination may be retaken only once and not in the same semester.

PUBLICATIONS

Prior to graduation, students are required to have published or have fully accepted at least one first authored publication in a refereed national or international journal that has been approved by their Advisory Committee. The publication must be based on work conducted during the doctoral program. In addition, students are strongly encouraged to publish other components of their research in appropriate journals and to present papers and posters at scientific meetings during their program of study.

Upon successful completion of the examination and all other degree requirements, the Advisory Committee will recommend the awarding of the Doctor of Philosophy degree by the Graduate School. **A graduate degree is not awarded solely because the student completes a prescribed number of courses. Graduate degrees are awarded on the judgment of the Advisory Committee and the Graduate Faculty to students who have demonstrated a level of professional competency and creativity deserving of the Doctoral Degree.**

CHANGE IN ADVISORY COMMITTEE

A graduate student may change the composition of their Advisory Committee (including the major professor); **however, any change in committee composition must be approved by the Graduate Studies Committee.** If the change is made early in the student's career, it will present few problems. However, if committee changes are made after the student has finished most of the course work, presented the 8103 and 8600 seminars, or advanced to Ph.D. candidacy, changing the composition of the Committee may lead to a delay in graduation. Therefore, requests for Committee changes late in a student's program are strongly discouraged. Regardless, to change membership of the Advisory Committee, the student must complete the proper Graduate School forms and petition the GSC for approval of the change.

Rules that apply are:

- A. If the Biology 8103 Seminar has been given, the student's new Advisory Committee will determine whether it will be repeated.
- B. The student's new Committee will determine any additional course work.
- C. The student may be required to take the Specialized Knowledge Examination from the new Advisory Committee. Therefore, if the student has taken the examination and then changes the membership of the Committee, the student may be required to retake the examination from the new Committee members.
- D. If the research for the dissertation has been presented previously to the faculty in a Biology 8600 seminar and has been judged satisfactory, the student may be required to present an additional seminar to the faculty that will include any additional research required by the new members of the Committee.

RESEARCH PROSPECTUS OUTLINE

The research prospectus will be written in the form of a grant proposal that is appropriate to the student's area of research. The format will be decided by the student and their Committee and will likely include the information in points 2 – 4 below. The copy of the prospectus to be kept on file in the Departmental office will include all of the information in points 1 – 9.

1) TITLE PAGE:

Research Title
Name
Degree Sought
Date
Names of faculty on Advisory Committee

2) OBJECTIVES OF RESEARCH:

Background information on questions
Importance of research to field of study
Hypotheses tested (Questions posed)
Specific explanations of interpretations of possible results

3) RESEARCH PROCEDURES:

Detailed presentation of Materials and Methods
Budget sheet listing materials required to complete research

4) POSSIBLE OUTCOMES (OR EXPECTED RESULTS)

Text and graphical data to show what results are expected (or likely) and how they will support or reject working hypotheses
A statement on how the study will be interpreted and what conclusions will be drawn if hypotheses are or are not supported

5) RESEARCH SUPPORT TO BE SOUGHT:

Granting Agencies (both government and private)
Departmental/University support

6) RESEARCH CHRONOLOGY:

Anticipated date of starting and finishing each portion of the research project
Anticipated date of first draft of thesis/dissertation
Anticipated date of submission of research for publication
Name(s) of journal(s) to which papers will be submitted
Anticipated date of graduation

7) ACCEPTANCE PAGE:

The student's Advisory Committee members' signatures below have knowledge of the student's proposed research area, know that the materials needed for the work are available and adequate for the proposed research, and are in general agreement that the area of research chosen will yield an original and significant contribution to scientific knowledge.

8) SIGNATURES OF COMMITTEE MEMBERS:

9) NAMES OF COLLABORATORS:

ABSTRACT FOR THESIS/DISSERTATION OUTLINE

TITLE PAGE:

Research Title
Name
Degree Sought
Date
Names of faculty on Advisory Committee

ABSTRACT

Introduction
Objectives
Hypotheses tested
Methods
Results
Significance

LITERATURE CITED/IMPORTANT REFERENCES (optional but recommended)

PUBLICATIONS

PRESENTATIONS

CLASSES TAKEN IN BIOLOGY/RELATED FIELDS DURING GRADUATE SCHOOL

GRANTS/AWARDS/HONORS

CHECKLIST FOR MASTER OF SCIENCE IN BIOLOGY

- Advisory Committee Formed (Graduate School [GS] form)
- Biology 7000 - Orientation to Graduate Studies
- Biology 7004 - College Biology teaching
- Biology 7200 - Seminar on dissertation research (research proposed and progress updates)
- Research Prospectus on file in Department of Biology (MS-thesis students only)
- Admission to Candidacy (GS)
- Course work completed
- Written Examination
- Results of Written Examination (GS)
- 6 Hours of thesis (BIOL 7092: Not required of non-thesis students)
- Biology 7600 - Seminar in Biology: Public defense of thesis (Not required of non-thesis students)
- Intent to Graduate card (GS)
- Final Oral Examination (GS)

The student is responsible for submitting the appropriate forms at the proper times and scheduling the required advisory meetings (with the approval of the major professor). Any omission or delay in satisfying requirements or submission of required materials may cause a delay in completion of the program and/or a delay in graduation. Failure to comply with program guidelines and policies may result in loss of funding and removal from the program.

CHECKLIST FOR DOCTOR OF PHILOSOPHY IN BIOLOGY

- Advisory Committee Formed (Graduate School (GS))
- Biology 8000 - Orientation to Graduate Studies
- Biology 8004 - College Biology teaching
- Biology 8200 - Seminar on dissertation research (research proposed and progress updates)
- Biology 8103 – Written submission and oral presentation of research prospectus
- Research Prospectus on file in Department of Biology
- Course work completed
- Foreign language or research tool completed
- Admission to Candidacy (GS)
- 18 Hours of dissertation
- Biology 8600 - Seminar in Biology: Public defense of dissertation (Not required of non-thesis students)
- Intent to Graduate Card (GS)
- Evidence of a publication in an acceptable journal
- Defense of Dissertation (GS)
- Final Oral Examination

The student is responsible for submitting the appropriate forms at the proper times and scheduling the required advisory meetings (with the approval of the major professor). Any omission or delay in satisfying requirements or submission of required materials may cause a delay in completion of the program and/or a delay in graduation. Failure to comply with program guidelines and policies may result in loss of funding and removal from the program.

DEPARTMENTAL AND GRADUATE SCHOOL FORMS

MASTER OF SCIENCE and DOCTOR OF PHILOSOPHY DEGREES in BIOLOGY

(forms are available on-line; see p. 2 for appropriate link)

FORM	WHEN TO FILE
Progress Report (Departmental)	Update spring of each year
Advisory Committee Formed (GS)	At first Advisory Committee meeting
Completion of comprehensive examinations (GS)	After comprehensive examinations
Completion of Defense (GS)	After completion of program
Application for admission to M.S. Degree candidacy (GS)	After completing course work and comprehensive examinations
Application for admission to Ph.D. Degree candidacy (GS)	After completing course work and comprehensive examinations

GS = Graduate School form

PROGRESS REPORT

Student's name _____ Semester, year admitted _____ Advisor _____ MS or PhD _____

Committee Members (by 2nd semester) _____ Date formed _____ _____(GC)
 _____ (Graduate Coordinator)

Committee meetings (actual date; one meeting/year) _____(GC)
 _____(GC)
 _____(GC)
 _____(GC)
 _____(GC)
 _____(GC)

Research Prospectus Title: _____

Date 7200/8200 presented: _____(GC)

Date approved by committee: _____ (within 1 mon of 7200/8200) _____(GC)

Completion of course requirements (semester, year)
 BIOL 7/8000 _____(GC)
 BIOL 7/8004 _____(GC)
 BIOL 7996/9000 _____(GC)

PhD Candidacy Requirements	Date	Pass or Fail	
General Knowledge Exam	_____	_____	_____ (GC)
	_____	_____	_____ (GC)
Specialized Knowledge Exam	_____	_____	_____ (GC)
	_____	_____	_____ (GC)
Prospectus (BIOL 8103)	_____	_____	_____ (GC)

Thesis/Dissertation Defense (BIOL 8600)	Date	Pass or Fail	
	_____	_____	_____ (GC)

Meet with Chair/Graduate Coordinator (every year)

_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
Date	(GC)	Date	(GC)	Date	(GC)

Online Addresses for Graduate Study

University of Memphis

Graduate School: <http://academics.memphis.edu/gradschool/>

Guidelines and Procedures:

<http://academics.memphis.edu/gradschool/admproc.html>

Admissions; <http://academics.memphis.edu/gradschool/applicant.html>

Admission Forms: <http://academics.memphis.edu/gradschool/forms1.html>

Graduate School Forms: <http://academics.memphis.edu/gradschool/forms1.html>

Thesis/Dissertation Preparation Guide: <http://academics.memphis.edu/gradschool/tdinfo.html>

Thesis/Dissertation Checklist: <http://academics.memphis.edu/gradschool/tdinfo.html#checklists>

Matriculating Students: <http://academics.memphis.edu/gradschool/graduation.html>

Department of Biology

Biology Homepage: <http://biology.memphis.edu>

Graduate Programs and Requirements:

<http://biology.memphis.edu/gradhome.htm>

College of Arts and Sciences

College of Arts and Sciences Homepage: <http://cas.memphis.edu/>

College of Arts and Sciences Graduate Office: <http://cas.memphis.edu/grad.html>