

**Guidelines  
For  
Graduate Studies In Biology**

**The Master of Science in Biology**

Department of Biology  
Virginia Commonwealth University  
1000 W. Cary St.  
Richmond, VA 23284-2012  
Telephone: (804) 828-1562  
Fax: (804) 828-0503

Revised 2015

## Table of Contents

	Page #
Introduction	1
Admissions	2
Advisement and Progress	4
Requirements for the Master of Science in Biology Degree	6
Academic Standards	8
Graduation Procedures	9
Extra-departmental Courses	10
Student Services	11
Appendix (with comment)	12
Form A: Request for Graduate Committee	13
Form B: Graduate Plan of Study	15
Form C: Master of Science in Biology – Research Proposal Cover Page	17
Form D: Application for Independent Study (BIOL 692)	19

## Introduction

This document is intended to serve as a guide for graduate students and faculty in the Department of Biology. It is neither comprehensive nor static, and is revised intermittently as programs, emphases and institutional regulations change. The Master of Science program for the graduate student in biology is administered by the College of Humanities and Sciences and the Department of Biology under the aegis of the Graduate School. The departmental Director of Graduate Studies is responsible for administration of the program. As described in the Graduate and Professional Programs Bulletin, major coordination of the various degree programs is performed by the University Graduate Council. Departmental considerations included herein supplement and conform to the policies, procedures and services of the university and College of Humanities and Sciences as outlined in the Graduate and Professional Programs Bulletin.

The mission of the Biology M.S. program is to prepare graduate students for admission to doctoral programs; for employment in laboratory and field programs in private industry or government agencies; for teaching in secondary schools, and for admission to schools of medicine, dentistry, and veterinary medicine.

The goals of the program incorporate the following **Student Learning Outcomes**:

- **Demonstrate knowledge of a chosen sub-field, including the most recent advances in research**
- **Apply appropriate research techniques (i.e., field or lab)**
- **Effectively communicate research and findings in a professional context**
- **Effectively write papers for publication**

## Admission

Information for Application to all VCU graduate programs is described at the following link: <http://graduate.admissions.vcu.edu/>

In addition to the general requirements for admission to graduate programs in the Graduate School and the College of Humanities and Sciences, the following requirements of the Department of Biology represent the minimum acceptable standards for admission:

1. Bachelor's degree in a biological or related science, or equivalent.
2. Appropriate college-level background in mathematics, chemistry and physics.
3. Three letters of recommendation pertaining to the student's potential for graduate study in biology.
4. Student's written synopsis of research interests.
5. Transcripts of all previous college work.
6. Satisfactory scores on the general Graduate Record Examination (GRE) and if English is not the first language, satisfactory scores on the TOEFL exam.

Admission to the biology graduate program is based upon undergraduate performance, satisfactory scores on the GRE, letters of recommendation and area of research interest that matches the research interests of an available faculty mentor. .

After all required materials have been received by the office of the dean of the Graduate School, the application will be forwarded to the Department of Biology for consideration. The Graduate Academic Committee of the Department of Biology will evaluate the application and recommend acceptance or rejection of the student for graduate study to the chair and the dean of the College of Humanities and Sciences.

The director of the Graduate Program in the Department of Biology should be consulted for information on sources of financial aid, including teaching assistantships. All students applying to the program will be considered for a teaching assistantship. Assistantships will be awarded on the basis of academic ability and experience. Assistantships are awarded for one academic year and extended for a second year pending academic and research progress.

## Advisement and Progress

The Graduate Director and members of the Graduate Academic Committee are prepared to advise and assist graduate students. Each student eventually will select a permanent graduate adviser (= thesis director). The student must secure the adviser's agreement to supervise his/her program. Selection and appointment of an adviser ordinarily will be completed early in the first semester of study. Graduate advisers must be members of the graduate faculty in the Department of Biology or have an affiliate appointment with the department. Upon completion of arrangements with a faculty member to serve as graduate adviser, the student and the adviser will then nominate a committee to oversee the student's program (see Form A: Request for Graduate Committee). Nominees will consist of the adviser, at least two members of the Department of Biology who are graduate faculty and at least one VCU faculty member from outside of the Department of Biology but within the University. Approval of the student's graduate committee will be made by the Graduate Director and the chair of the Department of Biology. The student must complete Form A and submit it to the Director of the Graduate Program. All requests for changes in committee, adviser or status of the student must be submitted in writing by the student to the Director of the Graduate Program, and approved by the chair of the Department of Biology.

It is the obligation of the student, the thesis director, and the student's thesis committee to ensure that the standards of the Department and the University, in general, and the profession, in particular, are upheld in fulfilling the degree requirements.

As soon as possible after the student's committee is formed, the student, adviser and committee will develop a plan of study. The plan, as developed by these individuals, will be recorded on Form B: Graduate Plan of Study. Prior to meeting collectively or individually with the committee, the student should meet with the Director of the Graduate Program in Biology to be sure that any deficiencies, provisions or similar items are indicated on Form B. It should be realized in planning that: 1) courses taken before the student's committee is formed will be accepted at the discretion of the committee; 2) students are encouraged to develop a committee early in the program; and 3) the student must complete Form C: Biology Research Proposal. Signatures on this proposal include those of the student's committee, the department chair and the director of the Graduate Program. The signed research proposal signifies the intent of the student, under the guidance of the thesis director and committee members, to fulfill all thesis requirements. Signed copies of Forms B and C, and a copy of the thesis proposal must be submitted to the director of the Graduate Program for retention in the student's file. Completion of the signed proposal is mandated by early in the second semester of full-time status or the student will receive a grade of "Unsatisfactory" in BIOL 698 Research and Thesis. In the event of a substantiated emergency or an unusual circumstance, the student may have the deadline extended at the discretion of the Graduate Director and receive a grade of "Incomplete." Failure to meet this requirement will result in an evaluation of the student's progress by the Graduate Academic Committee and action(s) will be recommended to the department chair.

Copies of Form B are to be kept by the student and supplied to the director of the Graduate Program. The files of the Graduate Academic Committee are housed in the director's office. They are managed by the director with the assistance of the Graduate Academic Committee. The various forms discussed herein may be obtained from the departmental office or photocopied from this document. All committee recommendations, deficiencies and grade transcripts will be kept on file, and the student's progress will be reviewed regularly by the Graduate Academic Committee.

### Timeline and Progress Check Points

Timeline	Suggested actions
First semester	Make final choice of adviser, select committee, plan future course work ( <u>Forms A</u> and <u>B</u> ).
Early 2 <sup>nd</sup> semester	Choose thesis topic, file <u>Form C</u> , begin research.
Semesters 3 & 4	Meet with adviser and the committee to review progress, solve problems and discuss career plans. Complete thesis and oral examinations.

## Requirements for the Master of Science in Biology Degree

Academic requirements of the Department of Biology include the following:

1. Full-time graduate status shall consist of a minimum of nine and a maximum of 15 credits per semester. Full-time students on stipends (research and graduate teaching assistants) must register for a minimum of 9 credits per semester.
2. Thirty credits of course work must be completed with a GPA of 3.0 or better for the degree of Master of Science in Biology. These must include:
  - A minimum of two and a maximum of seven credit hours in Current Topics in Biology (BIOL 693), **a minimum of six, and a maximum of nine, credit hours in research and thesis.**
  - All students are encouraged to enroll in Biology Seminar (BIOL 690). All graduate teaching assistants are **required** to enroll in Biology Seminar (BIOL 690) unless there is a conflict in a given semester with teaching or a course. This requirement began with students entering the program in Fall 2002. Note that a **maximum of four credit hours in BIOL 690 counts toward the required 19 credits designated exclusively for graduate students.**
  - At least 19 of the credits required in the student's program shall be those designated exclusively for graduate students.
  - Courses below the 500-level cannot count toward the 30-credit total.
  - Independent Study may be used as an elective, but only four credit hours may apply toward the degree. To register for Independent Study, Form D must be submitted and approved by the student's thesis committee and the director of the Graduate Program and must involve work that is different from thesis research.
3. Satisfactory completion of STAT 543 Statistical Methods or an equivalent course approved by the student's committee.
4. A maximum of six graduate credit hours for work taken at other institutions may be applied to the master's degree if they meet departmental approval. Credits transferred from another institution are not included in the VCU GPA determination.
5. All work applied toward the degree, including that transferred from other institutions, shall have been completed within **six years** of the date of entry into the master's program
6. The student must conduct original research and write a formal thesis. A research proposal (Form C) must be completed before initiation of thesis research. This proposal should be submitted by early in the student's second semester as a full-time graduate student.

7. The rules for preparing a thesis or dissertation are set forth in the Virginia Commonwealth University Graduate Thesis and Dissertation Manual:  
<http://graduate.vcu.edu/media/graduate-school/docs/pdf/ThesisandDissertationManual.pdf>

Note: While the basic rules must be followed, an acceptable option to the stated format is to include one or more manuscripts that have been prepared for publication in a scientific journal. Manuscripts included in the thesis should be written in the prescribed format of the journal to which they will be, or have been, submitted. Nevertheless, the thesis must have its own title page, table of contents and other components set forth in the VCU Graduate Thesis and Dissertation Manual. For example, it should contain an overall abstract, introduction, summary and a complete list of the references used in the various sections, even if these references duplicate a number of those present in the reference section of the included manuscript(s). Extra materials (summarized data, calculations, etc.) may be included in an appendix to the thesis. Examples of theses that included manuscripts are available from the director of the Graduate Program.

8. Upon completion of the thesis, the student must pass an oral examination consisting of a defense of the thesis and questions from areas including course work. The student and his/her graduate adviser are responsible for arranging the time and place of the oral examination with the coordinator of teaching laboratories. **This must be arranged a minimum of 10 working days in advance. The time, date and place of the examination will be communicated to the to the faculty by means of a departmental email at least five working days in advance of the exam.** The time, date and room chosen should provide an undisturbed period of no less than three hours for the examination process. The examination is open to all interested faculty but the student's entire graduate committee must be present. If circumstances require it, an alternate committee member may be approved by the department chair. In case the student fails such an examination, he/she will be allowed to retake the orals only after satisfying requirements and correcting deficiencies as outlined by the student's advisory committee.

**A draft copy of the entire thesis must be made available to each committee member at least 10 days prior to the date of the oral examination. A copy also must be placed in the department office at least seven days prior to the examination.** Students are expected to present seminars of about 30 - 45 minutes duration on their research at the beginning of the examination period. This presentation has been followed by questions and discussion, first by the general audience and then by the student's committee alone. **The Biology Thesis Scoring Rubric must be completed by all members of the thesis committee at the time of the thesis defense.**

### Academic Standards

1. A graduate student is expected to maintain an overall grade point average of 3.0 ("B") or greater. A student who does not maintain at least a 3.0 average will be placed on academic probation by the Graduate Academic Committee and will lose any Graduate Teaching Assistantship that has been previously awarded. While on academic probation, the student must receive a "B" or better in all courses. Probation will end when the grade point average is brought up to 3.0. If, while on probation, the student



does not receive a “B” or better on all course work, the student officially will be dropped from the program. Receipt of a grade of “C” or lower in more than two courses constitutes automatic dismissal from the program. Retaking a graduate course and receiving a higher grade does not remove the lower grade from the GPA calculations.

2. A graduate student must have earned an overall GPA of 3.0 **in courses taken at VCU** to receive a degree.
3. Courses with a grade of “C” or lower cannot be used toward the 30-credit total required for the Biology MS degree.
4. Students in the program are expected to exhibit professional behavior; unprofessional conduct is grounds for dismissal from the program.
5. All requirements for the master’s degree must be completed within six years from the date of admission to graduate study. This time limitation applies to both full-time and part-time students. Students may apply to the dean for an extension of up to one additional year.
6. Graduate students **must register for a minimum of one semester hour each semester** (fall and spring) they continue as a candidate for a degree. If a student plans a thesis defense and/or graduation during the summer months, he/she must register for a minimum of one semester hour for the summer semester. Failure to maintain continuous enrollment requires that the student reapply for admission to the graduate program. Such application must be within the time limits given above and does not assure readmission to regular degree-seeking student status.

## Graduation Procedures

1. The student must complete a graduation application through eservices, at which time a graduation fee will be paid. This is done during the semester in which the student expects to graduate. A paper copy of this application must be signed by the student on page 2, and by the advisor and the Graduate Director on page 1- section B and transmitted to the Dean of the College of Humanities and Sciences. Only original signatures are accepted. The **deadline** for this form is found in the online Academic Calendar for that semester, usually within the first three weeks of the semester. Note: This form will be signed by the Dean and returned to the Graduate Director. After the student has completed all of the steps below, the Advisor and Graduate Director must sign the form in section C and again it must be transmitted to the Dean, along with the thesis approval form (ETD form) on the Graduate School web site:  
<http://www.graduate.vcu.edu/student/thesis.html>
2. Note: If after filing a graduation application, a student does not complete the thesis, the Advisor and the Graduate Director must sign the graduation application in Section D and transmit it to the Dean. The student must then file a new graduation application in a subsequent semester.
3. During the preparation of the thesis, the student should consult the University Graduate Council Thesis and Dissertation Manual for proper format. This manual is available on the Graduate School web site:  
<http://graduate.vcu.edu/media/graduate-school/docs/pdf/ThesisandDissertationManual.pdf>
4. The student must notify the director of the Graduate Program in biology of the intended thesis defense date.
5. The student and adviser must schedule the final examination no later than the date indicated in the current Graduate and Professional Programs Bulletin as the final permissible date for oral defense of graduate thesis. Students are advised, however, to schedule the final examination at least one week prior to the final permissible date, to permit adequate time for corrections of the thesis.
6. Upon successful completion of the oral examination, the student must submit to the office of the dean of the College of Humanities and Sciences at least four copies of the final version of the thesis including the cover sheets (see sample in University Graduate Council Thesis and Dissertation manual) with all signatures except the dean's. A receipt from the cashier's office for a binding fee (presently \$7 a copy) also is submitted at this time. Additional bound copies of the thesis (also \$7 a copy) should be ordered at this time. The dean's office arranges for the binding and distribution of the final copies of the thesis. The unbound copies of the thesis including the signed cover sheets must be submitted to the dean of the College of Humanities and Sciences no later than **one week preceding** the graduation date. (i.e., date indicated in Graduate and Professional Programs Bulletin as "Conferral of Degree Dates").

### Extra-departmental Courses

In addition to the graduate course offerings in the Department of Biology, students may register (with appropriate permission) for graduate courses offered through VCU Life Sciences and the VCU School of Medicine. The schedule of classes for various departments should be consulted to determine if a course would be offered during the upcoming semester. Prior to seeking enrollment in any graduate course outside the Department of Biology the student should consult with his/her faculty adviser. In some instances the student may need to obtain permission from the course instructor prior to registration.

## Student Services

A number of student services are available at VCU for graduate students. Some of these services are listed here for your information.

- 1. Shuttle buses:** Shuttle bus service is available between the Monroe Park Campus and the MCV Campus. Schedules and maps are available online: <http://www.parking.vcu.edu/vcupark/transportation.htm>
- 2. Library facilities:** VCU has two major libraries – Cabell Library on the Monroe Park Campus and Tompkins-McCaw Library at the VCU Medical Center. Students may obtain, upon presentation of an ID card, access to the current journal area. Bound journals are located in the open information on library stacks on the 2nd floor. Online access is available from the VCU home page.
- 3. Student housing:** See the Graduate and Professional Programs Bulletin online or visit Residential Life and Housing online: <http://www.housing.vcu.edu/>
- 4. Health services** See the Graduate and Professional Programs Bulletin online or contact University Student Health Services: <http://www.students.vcu.edu/health/>  
**For Health Insurance:** [http://www.students.vcu.edu/health/health\\_insurance.html](http://www.students.vcu.edu/health/health_insurance.html)  
Married students may enroll spouse and children.
- 5. Parking:** See the Graduate and Professional Programs Bulletin online, or the Parking and Transportation Services Web site: <http://www.parking.vcu.edu/>
- 6. Gym and swimming pool facilities:** See the Graduate and Professional Programs Bulletin online or Recreational Sports online.
- 7. Counseling services:** See the Graduate and Professional Programs Bulletin online or contact the University Counseling Services: <http://www.students.vcu.edu/counseling/>
- 8. Future Planning:** See Graduate Bulletin and Professional Programs Bulletin online or contact the University Career Center: <http://www.students.vcu.edu/careers/>

## Appendix

On the Department of Biology website are the forms listed below. **When completed, all forms must be submitted to the director of the Graduate Program.**

- Form A is required for establishment of the Graduate Committee
- Form B enables the student to plan course work and research credit.
- Form C indicates thesis committee approval of the thesis research project and must be accompanied with a copy of the thesis proposal
- Form D is for independent study projects not directly related to thesis research.

## Thesis Research Proposal Guidelines

1. Excluding the title page, figures and tables, it is recommended that the written portion of the proposal not exceed eight double spaced pages. Proposals should include the following sections:
  - Introduction to the problem
  - Objectives
  - Study design
  - Methods of analysis
  - Expected significance
  - Literature cited (may be single spaced)
2. A proposal must be submitted to the all members of the student's committee by the end of the student's second semester.
3. A signed copy of the Graduate Thesis Proposal Cover Page (Form C) and a copy of the proposal must be provided to the director of the Graduate Program for retention in the student's file.

### Guidelines for Independent Study:

1. The purpose of BIOL 692 Independent Study is to give students the opportunity (with credit) to develop research skills or expertise not provided by courses or thesis research. It is not intended to provide “extra” credit for normal graduate requirements. Hence, a BIOL 692 problem must be substantively different from the student’s thesis research or course work.
2. A formal research proposal, including introduction, objectives, study design and methods of analysis, must be attached to the BIOL 692 request when submitted.
3. A written report of findings will be presented to the student’s committee chair and/or faculty member with whom the research was conducted for evaluation. The requested number of credits will be awarded at the discretion of committee and/or department chair.