PREFACE

The Graduate Student Handbook was written to provide graduate students with information about policies, procedures, and academic activities in the Department of Biological Sciences. Students should use the Handbook as a companion to the Florida Tech Graduate Catalog and The Graduate Program Policies and Procedures Manual. This Handbook should not substitute for either of those publications. The Graduate Program Policies and Procedures Manual is available through Florida Tech's home page through URL address http://www.fit.edu/grad-programs/policies.php. The Graduate Student Handbook is available through Biological Sciences home page at http://cos.fit.edu/biology/grad/catalog.php.

All Graduate Students are required to read this Handbook and familiarize themselves with its contents. It contains important information pertaining to your educational experience at FIT. Students are required to acknowledge reading this by signing and returning the Graduate Student Handbook Acknowledgment Form by 5:00 Friday, September 8, 2017.

Students should read the Handbook, Graduate Catalog, and Manual thoroughly and familiarize themselves with their contents. It is the student's responsibility to be aware of policies, deadlines, dates, programs, etc. that relate to matriculation. When questions arise, the student should first ask his/her advisor before talking to anyone else.

The Handbook includes Instructions for Preparing a Proposal, Thesis and Dissertation. These instructions have been approved by the Graduate Programs Office and must be followed explicitly. The formatting requirements in this guide take precedence over all other manuals and style sheets. Do not use other theses and dissertations as guides for format. From time to time, the Graduate Programs Office will publish format or style instructions that will differ from ours. Those instructions are for students in departments that do not have their own guidelines and instructions. You will continue to follow the instructions in this manual unless told otherwise by the Department Head.

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Department Head
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Florida Institute of Technology
August, 2017
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ACADEMIC DISHONESTY. Academic dishonesty, in any form, is a serious offense and must not be tolerated in any academic community. Dishonesty includes cheating, plagiarism, deception of effort, and unauthorized assistance. Academic dishonesty may result in a failing grade in a course and/or suspension or dismissal from the Graduate Program and FIT. Falsification of data is an extremely serious offense, and can be grounds for immediate dismissal. Plagiarism is discussed separately.

ADMISSION TO CANDIDACY. A student must fulfill specific requirements for the masters (p. 21) degree or doctorate (p. 36) to be admitted to candidacy.

ADVISOR. The advisor is the faculty member with whom you will work most closely during the period of graduate study and research. The advisor will sign forms, help with the program plan, supervise the writing of the proposal, and direct your research, etc. It is imperative that you can openly discuss all aspects of your graduate progress. If your research interests change and your new interests no longer lie in the area of your advisor's expertise, then you must change advisors (see Change of Advisor). Your new advisor must have the expertise to supervise your graduate research; otherwise you will not be permitted to conduct it.

ADVISORY COMMITTEE. The members of this committee serve on the student's thesis or dissertation committee. The term ‘Advisory Committee’ is used prior to admission to candidacy. Following admission to candidacy, the terms Thesis Committee or Dissertation Committee are generally used throughout this document. For the master's degree, there are at least 3 members (p. 22) and for the doctoral degree 5 members (p. 32). The Graduate Program Committee (GPC; pp. 4, 13) must approve the composition of the Advisory Committee for balance and uniformity. All graduate students must meet twice a year with their advisory committees. Since the committee must be formed in the first year of graduate training, the first meeting will be held in the first year. These meetings must include the student, the faculty advisor and all committee members. Following the meeting, the student will be responsible for completing the Report of The Graduate Advisory Committee Meeting form and submitting it to his/her advisor. The reports are distributed to the committee and are maintained in the student’s file. A student may not register for Fall semester if a report has not been filed in the prior six months. These reports will be considered a record of student progress and will be available for future meetings of the student’s committee. Failure to complete biannual meetings indicates a lack of progress and may result in a student being dismissed from the program.

ANIMAL CARE. Animals used in research must receive humane treatment at all times. Animals must be maintained under proper sanitary conditions and be sacrificed according to acceptable procedures. The federal government makes unannounced inspections to enforce compliance with these standards. The Institutional Animal Care and Use Committee (IACUC) must provide written approval prior to the acquisition and use of any live vertebrate animals in either teaching or research laboratories. Contact the IACUC chairperson (Dr. M. S. Grace) for further information.
APPEAL OF GRADES. Only the instructor may request grade changes. Normally, grade changes are permitted only when the instructor finds that an error was made in the computation or reporting of the final grade. The instructor cannot change the grade because the student later performs additional work or on the basis of a "retest." Changes of grade do not take effect unless approved by the Department Head and the Dean of the College of Science. If the student believes that the grading in a course was unfair or capricious, then the student should discuss this complaint with the instructor. If the complaint is not resolved after discussing it with the instructor, then the student should meet with the Associate Dept. Head (Graduate Programs) and the Department Head.

AUTHORSHIP ORDER FOR PUBLISHED THESES/DISSERTATIONS. In science, the student and advisor have traditionally co-authored the publications resulting from thesis/dissertation research. Authorship order depends upon balancing several factors. For example, the advisor has: 1) generally developed the original research idea; 2) taught techniques, methodologies, and scientific approaches; 3) helped with the completion of the project; and 4) overseen the writing of the thesis/dissertation. In addition, the advisor often contracts and bears scientific and financial responsibility to the funding agencies for administering and successfully completing the projects. On the other hand, the student has: 1) done most of the work; and 2) contributed to the success of the project.

There are other considerations that complicate matters. A large collaborative project involves many graduate students contributing to different parts of the project over a period of months or years. Under these circumstances, the authorship order becomes more difficult to assign. For these reasons, the advisor and student can avoid future misunderstandings by candidly discussing the authorship order.

BIOLOGICAL RESEARCH. BIO 5995 deals with advanced topics in biology related to the current research interests of individual faculty. The course consists of the development, execution, documentation and evaluation of an original research project selected by the faculty member in consultation with the student. The components to be completed during the semester are as follows:

1. Selection of a research topic designed to advance knowledge in the field, and to simultaneously instruct the student in current investigation in the discipline.

2. Preparation of a list of references on the research topic, to be read and discussed during the course of the semester.

3. Design of the research project to be completed during the semester.

4. Organization of regularly scheduled meetings between student and faculty to discuss research progress and analyze relevant papers from the reference list.

5. Preparation of a paper describing the accomplishments of the research project. The paper should consist of: Title Page, Introduction, Materials and Methods, Results and Discussion, and References. The paper should clearly illustrate the research accomplishments as well as an understanding of the literature in the field. The paper
must be submitted to the faculty member no later than the beginning of the last week of classes of the semester. See p. 10 for details.

6. Evaluation and critique of the paper by the faculty member and discussion of corrections and improvements.

7. Submission of a final copy of the paper to the Department no later than the Friday of finals week.

8. The grade for the course will be based on an evaluation of the student comprehension of the research topic and performance of the research, as evidenced by the quality of the student's final paper.

CHANGE OF ADVISOR. There are two primary reasons for changing advisors: 1) change in research interests and 2) personal or professional differences with the advisor. Regardless of the reason, the student should inform and discuss the change with the advisor. The student must also inform the GPC Committee of the intended change. If the student needs help in finding a new advisor, the student should discuss the matter with the Associate Dept. Head (Graduate Programs). During the interval, the Associate Dept. Head (Graduate Programs) will take care of routine administrative matters. The student should be aware that changing advisors might involve additional coursework and will involve abandoning the original research and starting on a new project. Moreover, the change will usually delay graduation. In any event, the student must find a new advisor within one semester. However, no faculty member is required to accept a student and serve as the advisor. Failure to find an advisor will result in dismissal from the department's graduate program. If a student's advisor leaves the university, the student does not have to leave the university. Every effort will be made for the student to continue the original research if significant progress has already been made.

CLASSROOM MANAGEMENT. Teaching Assistants (TAs) are expected to organize and run their laboratories in a professional manner. They should deal fairly and openly with the students. The TA should use time efficiently and establish a pleasant laboratory environment to accomplish the course objectives. Because laboratories generally maintain greater informality than lectures, talking among students is acceptable within bounds. However, radios and other distractions, such as iPods or Nerf basketball hoops, have no place in the laboratory.

COLLECTING PERMITS. Rapid development of Florida has placed heavy demands on its natural resources. Research requiring collection of organisms or environmental sampling should be designed to minimize collection impact as reasonably as is possible, and samples should be processed carefully and adequately to prevent waste. All collections must be made in accordance with legal requirements, including applicable permits and licenses.

COMMITTEES. Many departmental responsibilities are delegated to several standing (permanent) faculty committees. One that most directly relates to graduate students is the Graduate Program Committee.
GRADUATE PROGRAM COMMITTEE (GPC). The functions and responsibilities of the Graduate Program Committee are the following:

The Graduate Committee may appoint subcommittees to handle the different responsibilities (e.g., admissions, teaching assistantships, academic review).

1. **Graduate Admissions**
   The committee reviews applicants and makes recommendations for or against acceptance.

2. **Awarding Teaching Assistantships (TA):**
   The Graduate committee allocates Teaching Assistantships. TA's are awarded based on several factors that include:
   
   a) **Appropriate background of student for the course.**
      Every effort will be made to select students with the most relevant major and closest academic background for the course in question. This is in the best interest of the Biology Department and FIT, as it ensures the best and highest quality laboratory environment for our undergraduates.
   
   b) **Academic qualifications of the Graduate Assistants.**
      TAs must maintain a 3.0 academic average to qualify for a TA. Moreover, international students must have adequate verbal skills to be effective in the classroom, as measured by their TOEFL and SPEAK test scores.
   
   c) **Prior evaluation of teaching effectiveness.**
      TAs will be evaluated by course directors. Students receiving unsatisfactory evaluations will no longer be awarded Teaching Assistantships.

3. **Academic Standards**
   The following areas are the oversight of the Graduate Program Committee:
   
   a) **Recommendations (and periodic evaluation) of Degree Requirements for various programs.** Approval requires approval by vote of entire faculty.
   
   b) **Approval of the Graduate Advisory Committee.**
   
   c) **Monitoring student progress in terms of twice-yearly Graduate Advisory Committee meetings.** Students will not be permitted to register or remain in the graduate program if the advisory committee fails to meet every six months.
   
   d) **Evaluation of recommendations for students on academic probation.** The committee should monitor students’ plans for correcting deficiencies and get input from the Faculty Advisor.

**GPC Organization**

The GPC will be composed of the Graduate Program Director who will serve as the chair, and four (4) additional members elected by the faculty. As much as possible, members will represent all areas of interest in the department, including Aquaculture, Biotechnology, Cell/Molecular Biology, Ecology, and Marine Biology.

The four additional committee members will each serve a 4-year term, with one member rotating on and off every year.

COMPLAINTS/GRIEVANCES. The department is concerned about those matters that directly affect the student's academic performance, such as dishonesty, misrepresentation of data, cruelty to animals, or any violation of professional conduct by students or faculty. The student is
obliged to inform the Associate Dept. Head (Graduate Programs) and Department Head of these infractions. Confidentiality will be honored. In addition, conduct that hampers the progress of other students will not be tolerated. If the student cannot settle the matter privately, then the problem should be discussed with the advisor, Associate Dept. Head (Graduate Programs), and Department Head.

**COMPREHENSIVE EXAMINATION.** The comprehensive examination consists of a written exam administered to doctoral students by the end of their second year. The student is required to answer two questions, which are prepared, administered and graded by an Examination committee. The Examination Committee is comprised of the student’s Dissertation Committee and must contain a member of the GPC. See pp. 36 for details.

**DISMISSAL.** A master’s student must attain a 3.0 cumulative grade point average (CGPA), and a doctoral student a 3.2 in coursework required for graduation. Failure to attain the minimum CGPA specified below will result in academic dismissal. The advisor has the right to dismiss the student from his/her laboratory for lack of progress or cooperation or hampering the academic efforts of other students. (See the Graduate Policy Manual for special requirements pertaining to provisional students.)

<table>
<thead>
<tr>
<th>Master's</th>
<th>Minimum CGPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-17</td>
<td>2.50</td>
</tr>
<tr>
<td>18-23</td>
<td>2.70</td>
</tr>
<tr>
<td>24 or more</td>
<td>2.90</td>
</tr>
</tbody>
</table>

**Doctoral**

<table>
<thead>
<tr>
<th>Status</th>
<th>CGPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dismissal</td>
<td>below 3.0</td>
</tr>
<tr>
<td>Probation*</td>
<td>3.0&lt;3.2 (after 15 h)</td>
</tr>
<tr>
<td>Minimum satisfactory</td>
<td>3.2</td>
</tr>
</tbody>
</table>

* Any student on probation for longer than one semester is subject to dismissal.

In addition, two or more grades of "D", "F", or "U" in any course taken as a graduate student, the lack of satisfactory progress, or the hampering of the academic efforts of other students will result in dismissal.

A student may also be dismissed for conduct that violates the legal or ethical standards of the university. Examples include cheating, plagiarism, cruelty to animals, falsifying data, and forging or altering transcripts, laboratory notebooks, approval forms, etc.

**DISMISSAL APPEAL.** In all cases of academic dismissal, the Graduate Program Director notifies the student. The academic dismissal may be waived for educationally sound reasons by special action of the Graduate Council. A letter of appeal requesting a waiver of dismissal should be submitted to the Graduate Council through the Department Head. The letter
is forwarded to the Appeals Committee of the Graduate Council for careful consideration. Upon filing a letter of appeal, the student is permitted to enroll in classes until such time as the appeal is resolved. In case of denial of the appeal, the enrollment will be canceled and all tuition refunded.

**Dissertation Research (BIO 6999).** Only doctoral students who have been admitted to candidacy are allowed to register for dissertation research. The conditions for admission to candidacy are explained on p. 36. The student must submit a research report every semester (see p. 10 for format) except the last. The last semester the student will satisfy this requirement with the dissertation.

Once a student registers for dissertation, continuous registration in at least 3 credit hours of dissertation is required each semester until completion of the degree. Any exception to this rule (other than the semester of graduation) requires a Request to Waive Dissertation or Thesis Registration form and approval of the Department Head and Associate Dept. Head (Graduate Programs). An example of this would be if the student were going to be away from campus during the summer and not using any Florida Tech facilities or faculty time.

Dissertation registration in the semester of graduation may be for less than 3 hours if the minimum required total number of credits specified for the degree has been met and a full-three-hour registration was completed for the preceding semester. Students who receive a waiver of the requirement to register for the preceding semester, or who did not pass the oral defense of the dissertation during the preceding semester, must register for at least one hour in the semester of graduation, even if they finish prior to the end of the fourth week of the semester. If a student anticipates finishing the dissertation early in the semester, he/she should register for 0, 1, 2 or 3 credits of dissertation until the actual turn-in date according to the following schedule.

<table>
<thead>
<tr>
<th>Turn In Date</th>
<th>Credit Hours Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>By noon, 4th Friday of the semester (not applicable for students obtaining a waiver of the registration requirement for the preceding semester or who did not pass the thesis or dissertation defense during the preceding semester)</td>
<td>0</td>
</tr>
<tr>
<td>By noon, 8th Friday of the semester</td>
<td>1</td>
</tr>
<tr>
<td>By noon, 12th Friday of the semester</td>
<td>2</td>
</tr>
<tr>
<td>Monday after the 12 Friday of the semester, or later</td>
<td>3</td>
</tr>
</tbody>
</table>

Students who must add credits will not be assessed a late fee. Graduate Programs will take care of adding the appropriate number of dissertation credits on the turn-in date. Students may register for 0 or 3 credits of dissertation. Only the Graduate Programs Office can authorize less than 3 credits if it is the semester of graduation and the minimum required number of dissertation credits specified for the degree to be awarded has been met. The turn-in date is defined as the
date on which a minimum of 5 completed and signed copies of the dissertation are accepted by the Graduate Programs Office.

**GRADES.** The university uses a grading system of "A", "B", "C", "D", and "F" for its records, with corresponding quality points of 4, 3, 2, 1, and 0, respectively. There is one exception to this. Prior to the defense, grades of "S" or "U" (depending upon progress) will be assigned to BIO 5999 and BIO 6999. At the time of the actual defense, up to 6 hours of BIO 5999 will be converted to "P" or "F". A grade of "P" carries with it credit hours earned but does not affect the Grade Point Average.

A grade of "Incomplete" is given when extenuating circumstances prevent the student from completing the course requirements within the semester. Such extenuating circumstances might include: hospitalization from either illness or accident, personal tragedy in the family, or some other catastrophe. An "Incomplete" will not usually be given for reasons other than these. An "Incomplete" automatically becomes an "F" if course requirements are not fulfilled before the end of the 6th week of classes of the following semester, although the department may establish an earlier deadline if it chooses.

**GRADUATE STUDENT ASSOCIATION.** The Association includes all students working towards the M.S. or Ph.D. degree in the Department of Biological Sciences (p. 11).

**GRADUATE STUDENT PROGRESS FORMS.** All graduate students must complete the five graduate student progress forms to document their progress in the program. These are intended to assist the student in a smooth and timely manner through required coursework and research responsibilities. Please refer to the progress forms in the Appendix, page 63. Below is a summary of the progress forms and their intended use.

**Form I. Preliminary Conference.** The academic record and career goals of all incoming graduate students are reviewed at a preliminary conference with the advisor. Any course deficiencies or graduate transfer credits are established, and the student is helped to select courses for the first semester. This should be completed within the first few weeks of a student’s graduate program.

**Form II. Formation of Thesis or Dissertation Committee.** This form records your research committee members. Discuss with your advisor the appropriate individuals from the graduate faculty who can provide constructive input to your research project. This form should be completed by the middle of a student’s second semester, normally spring of the first year.

**Form III. Thesis/Dissertation Title and Proposal Approval.** This form records the title of your thesis/dissertation research proposal. It is completed and signed by all committee members immediately following your proposal defense meeting. Attach this form to your proposal as the proposal approval page before submission to the GPC.

**Form IV. Admission to Candidacy.** This form admits the graduate student to candidacy so that the research portion of the thesis or dissertation can formally begin. It should be completed by the end of the first year (master's) or by the end of the 5th semester (Ph.D.) of graduate study.
Form V. Approval for Thesis/Dissertation Presentation and Final Exam. This form documents preparation of the thesis/dissertation, promotes interaction with the advisor and committee members, and insures adequate lead-time for the formal presentation of your research and final exam. This form must be completed in its entirety a minimum of 2 weeks before the defense date.

TEACHING ASSISTANTSHIPS. Teaching Assistantships are awarded on a competitive basis to highly qualified graduate students who have demonstrated proficiency in English and successfully completed the university training program. TA funding will be assigned based on availability of funds, departmental need for TAs in undergraduate laboratories and academic merit of the applicant. Decisions regarding TA eligibility will be reviewed by GPC. Yearly renewal of assigned TAs will be contingent upon satisfactory progress towards degree goals. Lack of progress and/or failure to maintain satisfactory grades in coursework will result in withdrawal of TA support. A grade below "B" in any course may result in loss of TA support.

In an effort to distribute these assistantships to the largest numbers of students possible, a limit is placed on each appointment. For M.S. students, eligibility for TA assignment lasts for the first two years and M.S. students may not hold a TA beyond those first two years. A M.S. student who receives a TA in the second year of studies may only hold that position for one year. Doctoral students will be eligible to hold TA positions for a maximum of any five years of their graduate careers, but they will be encouraged to obtain research assistantships (with the help of their advisors) to reduce the time spent on TAs.

M.S. students who hold a TA and then upgrade to a Ph.D. do not reset their eligibility clock, i.e. if two years of TA support have been used in the M.S. phase, upon acceptance into the Ph.D. program the student would have eligibility for 3 yearly renewals of their TA (a total of five years of support in the graduate program). If a student fails the comprehensive exam, s/he may complete her/his M.S. degree, but his or her TA will not be continued beyond the semester in which s/he failed the exam.

All TA’s are required to attend a departmental safety seminar held in August before the beginning of classes for the year. This will cover aspects of safety and chemical waste disposal related to teaching and research laboratories. TA’s are also required to attend the University-wide GTA training seminar, also held before the beginning of Fall semester courses.

LETTERS OF RECOMMENDATION. Students often ask their advisors and other faculty members to write letters of recommendation for prospective jobs, for further graduate study, or for admission to professional schools. Although most faculty members will write letters of recommendation, a faculty member is not required to write a letter and can refuse. Before asking for a recommendation, the student may be asked to sign the waiver on the application. If the application lacks a waiver statement, special forms are available in the departmental office. A separate waiver is required for each letter. Because the waiver ensures confidentiality, a letter accompanied by a waiver is more highly regarded and trusted than a letter without a waiver. Most faculty members will not write letters without waivers.

LICENSES. For reasons of health, safety, and professional standards, many local, state, and federal agencies and professional societies require licensing for: alcohol (Alcohol, Tobacco
and Firearms); drugs (Drug Enforcement Agency); radioactive isotopes (Nuclear Regulatory Commission and Health and Rehabilitative Services); animal care (U.S. Department of Agriculture and National Institutes of Health); endangered species (Florida Fish and Wildlife Conservation Commission and U.S. Wildlife Service). Check with your advisor to determine whether you need to be licensed to conduct your research. Failure to comply can result in loss of license for the department or entire university. In addition, the violator (student or faculty member) may be fined, imprisoned, and/or dismissed from the university (see Professional Conduct).

OFFICE HOURS. Faculty keeps office hours for the times when they will be available for consultations. Please respect their busy schedules, and make all appointments through the departmental secretary.

OWNERSHIP OF RESEARCH DATA. All data collected for the graduate degree are the property of the Florida Institute of Technology and are administered by the advisor for the Department of Biological Sciences. Although the student usually may make copies of notebooks and other data (films, videotapes, computer printouts, programs, etc.), the original data must remain with the advisor. The student will not graduate until all original data have been returned to the advisor. The student may not present these data at any meeting or publish it in any form before or after graduation without the consent of the thesis/dissertation advisor.

PERSONAL PROBLEMS. Sometimes the pressures of graduate school, personal, or financial problems weigh heavily on the student. Moreover, certain matters cannot be comfortably discussed with other students, friends, or the advisor. Whatever the reason, the student is urged to avail himself or herself of the free services of the Campus Ministry (674-8045 or 674-7476) and Counseling and Psychological Services (CAPS) (674-8050). The student should contact these services directly. They are open 10:00-5:00 weekdays and have 24 h hotlines. All conversations are completely confidential and remain a private matter between the student and the chaplain or counselor. If the need arises, the student can request that these services contact the department or advisor in the student's behalf.

PLAGIARISM. Plagiarism, especially intentional plagiarism, is an extremely serious offense. Plagiarism provides substantial grounds for dismissal from the university.

Plagiarism includes, but is not limited to, copying text verbatim from other publications (including, but not limited to, scientific papers, websites, newsletters, newspapers, and magazines) without quotation marks (or block-indentation) and attribution; copying text from other publications and changing a few words without attribution; copying images without attribution; copying anything from fellow students in written exams or papers; repeating another person’s concepts or ideas in a paper without proper attribution; and submitting papers purchased from websites or other sources.

For further discussion of plagiarism, including additional examples, and additional information on Florida Tech's policy on plagiarism, students are advised to visit the following web site: [http://www.fit.edu/current/documents/plagiarism.pdf](http://www.fit.edu/current/documents/plagiarism.pdf)
PROFESSIONAL CONDUCT. Students and faculty are expected to conform to codes of ethics and conduct established by professionals in their fields. Serious breaches of codes such as fabrication of data and unprofessional conduct will result in dismissal.

Once the student has accepted admission into our program, he/she is subject to the ethics, professional standards and laws relating to biologists, such as state and federal licenses for endangered species, public health certification, and licenses for clinical specialties, consent forms, and proper animal care. For this reason, the student may not engage in any professional activity (for pay or otherwise) without the appropriate certification and/or approval of the advisor or Department Head. To disregard the need for approval or to engage in activities that seem either unethical or inappropriate will be cause for dismissal from the program. It is further understood that after graduation the student will not engage in any professional activity without appropriate state, federal, or professional certification, licensure, etc.

PROFESSIONAL SOCIETIES. All faculty members have joined professional societies in their specialties. Societies are important for professional development, scientific contacts, and employment opportunities. These societies hold meetings at which regular and student members present papers and posters. Some societies are responsible for certification and licensing. Check with your advisor about the one(s) that you should join.

PROGRAM PLAN. The program plan represents the official credit hour requirements for graduation. Changes in it because of new or canceled courses, change of advisor, etc., require approval by the GPC Committee (see below).

PROGRESS TOWARDS THE DEGREE. Graduate students must demonstrate that they are making progress towards the degree (M.S. or Ph.D.). Students who are not making sufficient progress run the risk of losing graduate assistantships and/or of being dismissed.

PROPOSAL DEFENSE. The proposal defense is an oral exam administered by the thesis/dissertation committee and emphasizes the proposed research and related research literature. See details on pp. 23, 36.

PUBLICATION OF THESE AND DISSERTATIONS. Publications are professionally important for obtaining employment, promotions, grants and contracts. Although an advanced degree strengthens a person's credentials, a person who has published has additional professional achievement. A thesis/dissertation is considered to be "unpublished" until it appears as a journal article or as a chapter in a book. Graduate students are strongly encouraged to publish as often as the data justify. For practical reasons, graduate students find it easier to write manuscripts from the thesis/dissertation research while in graduate school than after graduation. After graduation, new graduates will obviously spend their time searching for jobs or devoting their fullest efforts to doing well at their new jobs.

RESEARCH NOTEBOOK. Each student must maintain a research notebook. The notebook serves as a research diary for writing down the raw data as they are collected. The notebook should always be accessible to the advisor. The student should discuss the form and requirements for a Research Notebook with the advisor.
RESEARCH REPORTS. The department offers 4 research courses: BIO 5995 - Biological Research; BIO 5998 - Biological Research Rotation; BIO 5999 - Thesis; BIO 6999 - Dissertation. Students must submit research reports to each member of the advisory committee for each research course enrolled in no later than the Friday of the last week of classes of the semester. The purpose of this report is to document, for the committee, research progress made during the semester. Committee members should evaluate the report for progress (since the last report) and for adherence to the research proposal. Any committee member may request a meeting with the student if problems surface. The student is advised to "use" their committee and should schedule meetings with individuals or the entire committee whenever problem arises or they deem it necessary. Don't wait for the committee to schedule a meeting. After the advisor and committee members have approved it, the report is graded and kept in the department's files. It is not returned to the student.

The report format follows this general outline:

a. Title page (project title, course number, student's name)
b. Summary/Abstract
c. Introduction
d. Materials and Methods
e. Results
f. Discussion
g. Literature Cited

Pages in the report must be numbered, except for the Title page. It is recommended that students begin learning and applying the instructions for thesis and dissertations (p. 36) in the preparation of all research reports.

Students enrolled in BIO 5999 or BIO 6999 should append a short description to the research report that documents the progress made over the semester to help the committee track progress towards the degree.

RESEARCH SEMINAR AND DEFENSE. All students must present a research seminar for either their thesis (p. 24) or dissertation research (p. 37) to fulfill their graduation requirement. Students should register for Biological Research Seminar (BIO 5990, 0 credit hour) in the semester they intend to graduate and then Ph.D. students will add/drop to BIO 5991 (1 credit hour) at the time the student actually presents the seminar.

SEMINARS. Students are required to attend all departmental seminars. Regularly scheduled departmental seminars are held every Thursday; times are posted. In addition, unscheduled seminars are held periodically.

STUDENT ACTIVITIES.

Aquaculture Society. This is an on-campus organization for students with an interest in aquaculture. It is open to any student at any grade level. The objectives of the club are to enhance the student's exposure to aquaculture beyond that experienced in normal curricular activities. Tours to various in-state facilities, attendance and volunteer staffing at state and national conventions, special demonstration projects and fish fries are examples. The society also maintains several display aquaria on campus. Meetings and activities are posted in advance.
Graduate Student Association. All students working toward the M.S. or Ph.D. degrees in the Department of Biological Sciences are members of the Graduate Student Association (GSA). Regular meeting attendance and participation in GSA sponsored events is encouraged and expected of all graduate students. Meetings are generally held every other week on Thursday afternoons immediately following the departmental seminar. The primary functions of the GSA are: to organize and sponsor a seminar or workshop series on various topics selected by graduate students; to facilitate communication among graduate students, faculty, and administration; to provide information and tours to prospective or incoming students in the Department of Biological Sciences; to provide a forum where proposals, seminars, and research ideas may be presented and discussed. In addition, the GSA sponsors an annual poster session near the end of the fall semester at which graduate students prepare and present posters of their past, current, or proposed research at Florida Tech.

Sigma Xi. Sigma Xi is the national scientific research society. Florida Tech has an authorized chapter. To join, the student must be nominated by faculty members. Sigma Xi gives grants-in-aid of several hundred dollars for successful research proposals. Deadlines for receipt of applications are 1 February, 1 May, and 1 November each year.

Tri-Beta. The Sigma Psi chapter of Tri-Beta, the national biology honor society, was chartered during the 1980-81 academic year. Announcements of activities are appropriately posted. All graduate students who were Tri-Beta members at other institutions are urged to transfer their memberships. Those who are not members of Tri-Beta are urged to join as graduate members of our local chapter.

TELEPHONE. Students may not use faculty or office telephones for making toll calls (long-distance) unless they receive prior permission from either the Department Head or advisor. Students or their friends should not ask the departmental secretaries to take messages except in emergencies or for official business. Private calls should be made from private phones.

THESIS/DISSERTATION COMMITTEE. The thesis/dissertation committee has the responsibility for general supervision of the student's research and ultimately of certifying to the Graduate Programs Office that an acceptable thesis or dissertation has been submitted and all degree requirements are completed. The committee also has the general responsibility for monitoring the student's progress. For the master's degree, there are at least 3 members (p. 22) and for the doctoral degree, 5 members (p. 32). The GPC (p. 4) must approve the composition of the committee for balance and uniformity.

THESIS RESEARCH (BIO 5999). The student must have at least a 3.0 CGPA for formal coursework and an approved thesis proposal on file before registering for thesis (see p. 21 for details). The student must submit a research report to the thesis committee every semester (see p. 10 for format) except the last for which the thesis satisfies the report requirement. Once a student registers for thesis, continuous registration is required each semester until completion of the degree. Any exception requires a Request to Waive Dissertation or Thesis Registration form and approval of the Associate Dept. Head (Graduate Programs) and the Department Head. An example of this would be if the student were going to be away from campus during the summer and not using any Florida Tech facilities or faculty time.
THESIS/DISSERTATION DEFENSE. Defense of the thesis/dissertation consists of a seminar at which the student presents his/her research in its entirety followed by an oral exam conducted by the student's committee. See pp. 24 (M.S.) and 37 (Ph.D.) for details.

DEGREE PROGRAMS

The Department of Biological Sciences offers opportunities for advanced study and research leading to the Master of Science and the Doctor of Philosophy degrees in Biological Sciences. The degree programs are organized with emphasis in cell and molecular biology, ecology and conservation biology, and marine biology. The master's or Ph.D. degree is awarded to candidates who have 1) displayed an in-depth understanding of the subject matter and 2) demonstrated the ability to make original contributions to knowledge in their fields of specialty.

ORGANIZATION AND ADMINISTRATION OF THE GRADUATE PROGRAM

The graduate program in the Department of Biological Sciences is administered through the Graduate Program Committee (GPC). The GPC is comprised of 5 members selected from the Department's graduate faculty who are active in the graduate program. The GPC recommends admission of students into the program, sets degree requirements, and recommends students for admission to candidacy for the M.S. and Ph.D. degrees. Once the student is advanced to candidacy, the thesis or dissertation committee, chaired by the student's thesis or dissertation advisor, has the responsibility of monitoring the student's progress through the program in a timely manner.

The Staff Assistant is the person who actually does a lot of the work and knows the specifics of where the students stand in their program. The Staff Assistant keeps the records on students and sees that paper is processed in a correct and timely manner. Most questions concerning routine procedures should be addressed to the Staff Assistant.

The following individuals currently administer the Department of Biological Sciences graduate program:

GRADUATE PROGRAM COMMITTEE.
Dr. David J. Carroll, Chairperson
Dr. Robert van Woesik
Dr. Mark Bush
Dr. Andrew Palmer
Dr. Eric Guisbert
Dr. Spencer Fire

Staff Assistant and Person to Whom you Should Really Listen
Ms. Dee Dee Van Horn
FULL-TIME ACADEMIC FACULTY, DEPARTMENT OF BIOLOGICAL SCIENCES.

Richard B. Aronson, Ph.D.
Department Head and Professor of Biological Sciences
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  Paleobiology
  Climate Change
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Mark B. Bush, Ph.D.
Professor of Biological Sciences
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  Paleoecology
  Creation and Restoration of Coastal Wetlands
  mbush@fit.edu

David J. Carroll, Ph.D.
Associate Professor of Biological Sciences
  Signal Transduction at Fertilization
  Developmental Biology of Echinoderms
  Initiation of Calcium Release at Fertilization
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Toby S. Daly-Engel, Ph.D.
Assistant Professor of Biological Sciences
  Molecular ecology of sharks, rays, and other fishes
  Evolution of high-investment reproductive strategies
  Speciation, dispersal, and genetics of marine organisms
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Tristan J. Fiedler, Ph.D.
Assistant Professor of Biological Sciences
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  Bioethical Implications of understanding and using our Genome
  VP for Federal Research Programs & Corporate Relations
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Spencer Fire, Ph.D.
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  Effects of harmful algal blooms on marine megafauna
  Trophic transfer of toxins in marine food webs
  Biological Oceanography/Marine Mammalogy/Toxicology
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8/24/2017
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  Circadian Oscillators in Cultured Mammalian Retina
  Mechanisms of Infrared Detection in Boid and Crotalid Snakes
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  Identification of Signal Transduction Molecules in Zebrafish Embryos
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  Molecular Biology/Cell Biology/Genetics/Biochemistry
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  DNA-Protein Interaction in Living Cells
  Bacteria Associated with Antarctic Marine Sponges
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  Physiology and Ion Channel Structure/Function
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  Cell signaling following plant-pathogen interactions
  Chemical Biology/Plant Biology/Biochemistry
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John G. Morris, Ph.D. Professor Emeritus
Associate Professor of Biological Sciences, Retired
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  Habitat Analysis of Rare, Threatened, and Endangered Species of Florida
  Biology of Marine Mammals
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Kenia P. Nunes, Ph.D,
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  Vascular Physiology associated diseases (Hypertension/Diabetes/Erectile Dysfunction)
  Animal toxins from spider venom to improve erectile function
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  Ecological Morphology of Feeding Systems
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  Coral Reef Community Structure and Diversity
  Marine and Coastal Habitat Management
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  Plant Physiology
  Plant Tissue Culture
  Preservation of Rare Species Using Tissue Culture Techniques
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Gary N. Wells, Ph.D., *Professor Emeritus*
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Biochemistry
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Shaohua Xu, Ph.D.
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Protein Structure/Aggregation,
Amyloid Fiber formation
Bone formation and Loss
shaohua@fsri.org

DEGREE REQUIREMENTS AND PROCEDURES

**DEGREES OFFERED.** There are four graduate degrees offered through the Department of Biological Sciences: the Ph.D. and M.S. in Biological Sciences, the M.S. in Biotechnology and the M.S. in Conservation Technology. Both the Ph.D. and M.S. in Biological Sciences require the preparation and defense of a thesis or dissertation. The M.S. in Biotechnology and the M.S. in Conservation Technology are non-thesis master’s degrees. Although not necessary, it is encouraged to obtain the M.S. degree before starting the Ph.D. program.

**MASTER OF SCIENCE IN BIOLOGICAL SCIENCES.** The Master of Science degree in Biological Sciences can be earned in one of three major areas: ecology, marine biology, or cell and molecular biology. The purpose of each option is to prepare the student for a professional career or for further graduate study. This goal is achieved through a balance of coursework and research activities. Each of the eight research interest areas listed on p. 13 falls into one of these three major areas.

The Master of Science degree requires the successful completion of at least 30 semester hours of graduate credit, which must be approved by the GPC. These 30 credit hours will be subject to the following conditions:

1. A minimum of 18 semester hours of formal coursework must be completed within the university or by transfer credit. This total may include up to 6 hours of approved 4000-level undergraduate coursework.

2. An additional 12 hours of graduate credit as approved by the GPC must be completed. This total may include 3 hours of Biological Research (BIO 5995) or Biological Research Rotation (BIO 5998). BIO 5995 and BIO 5998 are, however, not requirements, and the student is permitted to substitute with formal coursework. The GPC must approve more than 3 hours of BIO 5995 or BIO 5998. The student must also complete up to 6 hours of Thesis in Biological Sciences (BIO 5999). Once started, continuous enrollment in 3 semester hours of thesis is required until all requirements for the degree are satisfied, but only 6 semester hours may apply to the degree.
3. Enrollment in Biological Sciences Seminar (BIO 5990) is required each semester. Exceptions may be made for students unable to attend seminar on a regular basis due either to employment or research obligations at sites remote to campus. The Department Head of Biological Sciences must approve requests for permission to not register for BIO 5990. The student must present a public research seminar during the final semester of their program.

Summary of Program Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal Coursework</td>
<td>18-24</td>
</tr>
<tr>
<td>Biological Sciences Seminar</td>
<td>0</td>
</tr>
<tr>
<td>Biol. Res. and/or Biol. Res. Rotation</td>
<td>0-6</td>
</tr>
<tr>
<td>Thesis</td>
<td>6</td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

Transfer of Credits. Students matriculating with a B.S. or B.A. degree may receive up to 12 semester credit hours of transfer credit provided the courses are eligible for graduate credit at the institution where they were taken and they were not used to complete requirements for the undergraduate degree. Classes taken at Florida Tech or other universities are not eligible for transfer credit if a grade of "C" or lower was earned.

All transfer credit to be applied to the M.S. program in Biological Sciences must have been earned within 7 yr immediately preceding the date of matriculation of the student into the program. Exceptions may be approved upon the recommendation of the thesis advisor and with the approval of the GPC and Graduate Council.

Selection of Thesis Advisor. The thesis advisor must be a member of the Graduate Faculty; students may do their research with Associate Graduate Faculty in the Department (see pp 14-17) under the supervision of a member of the Graduate Faculty. New graduate students must have selected an advisor and been accepted into a laboratory before coming to Florida Tech. Only students with advisors are permitted to register for courses. The thesis advisor serves as the chair of the thesis committee.

Program Plan. The student and his/her thesis/dissertation advisor collectively construct and submit a Program Plan to the GPC for review and approval. The Program Plan includes the name of the advisor and a list of all courses to be counted toward the M.S./Ph.D. (see Appendix for Program Plan form.) Each graduate student is required to have an approved program plan on file no later than one month prior to completion of 9 semester credit hours of graduate coursework. Failure to submit the program plan on time will result in a "hold" being place on the student's registration. See section 1.3.1 of the Graduate Program’s Policies and Procedures Manual.

Students may pursue one of three Program Plans depending upon their field of interest. Each Program Plan consists of four parts: (1) Core Curriculum (required of all students in that program); (2) Seminars; (3) Electives; and (4) Research and Thesis. Students must have the prerequisite for any core courses they select; otherwise they must take prerequisites as
deficiencies. Core courses are essential to the discipline being studied by the student and should not be considered deficiencies.

**Full Time Status.** Eligibility requirements for scholarships and student loans often require the recipient to be a full time student at Florida Tech. To be considered full time, a graduate student must be enrolled for 9 credits of formal course work. When students register for a research course, the university’s expectation is that they will work full time toward completion of their degree. Therefore, a 3 credit hour registration in any one of the following research courses constitutes full time status:

- BIO 5995 Biological Research
- BIO 5997 Industrial Internship (6 hours)
- BIO 5998 Biological Research Rotation
- BIO 5999 Thesis in Biological Sciences
- BIO 6999 Dissertation

**Program Plan for Cell and Molecular Biology (Major Code 8022).**

Core Curriculum
- BIO 5501 Cell and Molecular Biology (3 credits)
- BIO 5576 Molecular Genetics (3 credits)

Seminars
- BIO 5990 Biological Sciences Seminar (0 credit)

Electives **Course offerings are dynamic; please consult this list and a current catalog.**
- BIO 4150 Special Topics in Molecular Biology (3 credits)
- BIO 5012 Protein Biotechnology (3 credits)
- BIO 5080 Mechanisms of Biological Clocks (3 credits)
- BIO 5502 Molecular Biology of Signal Transduction (3 credits)
- BIO 5515 Pharmacology and Drug Design (3 credits)
- BIO 5522 Bioinformatics, Genomics and Proteomics (3 credits)
- BIO 5530 Molecular Biology (3 credits)
- BIO 5535 Current Topics in Biotechnology (3 credits)
- BIO 5537 Applied Biotechnology (6 credits)
- BIO 5539 Microbial Biotechnology (3 credits)
- BIO 5545 Growth and Division of Cells: Prokaryotes (3 credits)
- BIO 5546 Growth and Division of Cells: Eukaryotes (3 credits)
- BIO 5575 Biology of Cancer (3 credits)
- BIO 5576 Molecular Genetics (3 credits)
- BIO 55785 Protein Structure and Function (3 credits)
- BIO 5600 Advanced Plant Physiology (3 credits)
- BIO 5605 Plant Cell Studies (3 credits)
- BIO 5725 Pathogenic Bacteriology (3 credits)
- BIO 5815 Molecular Studies of Marine Biodiversity (3 credits)
- ISC 5016 Presenting Science (3 credits)
(See also electives and core curriculum for Marine Biology and Ecology and Conservation Biology programs for additional choices.)

Research and Thesis
- BIO 5995 Biological Research (3 credits)
- BIO 5998 Biological Research Rotation (3 credits)
- BIO 5999 Thesis in Biological Sciences (3 credits)

Program Plan for Marine Biology (Major Code 8023).

Core Curriculum
- BIO 5028 Design and Analysis of Ecological Studies (3 credits) or
- BIO 5075 Multivariate Analysis in Biology (3 credits)

Seminars
- BIO 5990 Biological Sciences Seminar (0 credit)

Electives Course offerings are dynamic; please consult this list and a current catalog
- BIO 4515 Ecology of Coral Reefs (3 credits)
- BIO 4517 Modeling for Ecology and Biology (4 credits)
- BIO 4710 Marine Biology (4 credits)
- BIO 4720 Marine Ecology (4 credits)
- BIO 4904 Field Biology and Evolution of the Galapagos Islands (3 credits)
- BIO 5005 Comparative Biology of Invertebrates (3 credits)
- BIO 5011 Ornithology (3 credits)
- BIO 5022 Coral Reef Ecology (3 credits)
- BIO 5025 Ecology of Salt Marsh and Mangrove (3 credits)
- BIO 5030 Conservation Biology (3 credits)
- BIO 5031 Conservation Genetics (3 credits)
- BIO 5036 Exploration of Animal Behavior
- BIO 5037 Navigation and Orientation of Marine Animals (3 credits)
- BIO 5038 Behavior and Sensory Biology of Fishes (3 credits)
- BIO 5042 Feeding Ecology of Fishes (3 credits)
- BIO 5060 Biology and Ecology of Seagrasses (3 credits)
- BIO 5065 Natural History of the Indian River Lagoon (3 credits)
- BIO 5085 Biological Imaging (3 credits)
- BIO 5090 Natural History and Management of the Upper St. Johns River (3 credits)
- BIO 5120 Ecology of Tropical Marine Communities (3 credits)
- BIO 5140 Coral Ecology (3 credits)
- BIO 5420 Pre-Columbian Ecosystems (1 credit)
- BIO 5421 Neotropical Archeoecology (3 credits)
- BIO 5510 Current Topics in Ecology (3 credits)
- BIO 5573: Scientific Analysis, Writing and Presentation (3 credits)
- BIO 5630 Sensory Biology (3 credits)
- BIO 5813 The Biology of Sea Turtles (3 credits)
- BIO 5815 Molecular Studies of Marine Biodiversity (3 credits)
- ENS 5800 Limnology 1 (3 credits)
ENS 5801 Limnology 2 (3 credits)
ISC 5016 Presenting Science (3 credits)
OCN 5102 Marine Phytoplankton (3 credits)
OCN 5103 Marine Zooplankton (3 credits)
OCN 5104 Marine Benthos (3 credits)

(See also electives and core curriculum of Cell and Molecular Program and Ecology and Conservation Biology Program for additional choices.)

Research and Thesis
BIO 5995 Biological Research (3 credits)
BIO 5998 Biological Research Rotation (3 credits)
BIO 5999 Thesis in Biological Sciences (3 credits)

Program Plan for Ecology and Conservation Biology (Major Code 8021)

Core Curriculum
BIO 5028 Design and Analysis of Ecological Studies (3 credits)

Seminars
BIO 5990 Biological Sciences Seminar (0 credit)

Electives Course offerings are dynamic; please consult this list and a current catalog
BIO 4515 Ecology of Coral Reefs (3 credits)
BIO 4517 An Introduction to Modeling for Ecology and Biology (4 credits)
BIO 5011 Ornithology (3 credits)
BIO 5023 Field Ecology 3 (3 credits)
BIO 5024 Field Ecology 4 (3 credits)
BIO 5030 Conservation Biology (3 credits)
BIO 5031 Conservation Genetics (3 credits)
BIO 5034 Paleoclimatology and Paleoecology (3 credits)
BIO 5042 Feeding Ecology of Fishes (3 credits)
BIO 5060 Biology and Ecology of Seagrasses (3 credits)
BIO 5065 Natural History of the Indian River Lagoon (3 credits)
BIO 5070 Physiological Ecology (3 credits)
BIO 5085 Biological Imaging (3 credits)
BIO 5090 Natural History and Management of the Upper St. Johns River (3 credits)
BIO 5120 Ecology of Tropical Marine Communities (3 credits)
BIO 5140 Coral Ecology (3 credits)
BIO 5420 Pre-Columbian Ecosystems (1 credit)
BIO 5421 Neotropical Archeoecology (3 credits)
BIO 5510 Current Topics in Ecology (3 credits)
BIO 5573: Scientific Analysis, Writing and Presentation (3 credits)
ENS 4010 Geographical Information Systems (3 credits)
ENS 5001 Global Environmental Problems and Solutions (3 credits)
ENS 5701 Environmental Regulation and Impact Assessment (3 credits)
ISC 5016 Presenting Science (3 credits)
OCN 5204 Marine Pollution (3 credits)
OCN 5801 Coastal Systems Planning (3 credits)
OCN 5803 Legal-Environmental Relationships (3 credits)

(See also electives and core curriculum of Cell and Molecular Program and Marine Biology program for additional choices.)

Research and Thesis
BIO 5995 Biological Research (3 credits)
BIO 5998 Biological Research Rotation (3 credits)
BIO 5999 Thesis in Biological Sciences (3 credits)

Admission to Candidacy. A graduate student becomes a Degree Candidate by satisfying the following requirements:

1. Removal of all specified course deficiencies
2. Completion of at least 9 hours of graduate courses in good standing (as described by the academic dismissal regulations of the Graduate School)
3. Approval of a Program Plan by the GPC
4. Completed forms providing evidence of two Advisory Committee meetings per year.

The student then completes Progress Form "IV. Admission to Candidacy" (see Appendix).

Thesis Committee. The thesis committee has the responsibility for general supervision of the student's research and ultimately of certifying to the Graduate Programs Office that an acceptable thesis has been submitted and that all degree requirements are completed. Although the thesis advisor provides day-to-day guidance to the student, all members of the committee are available for consultation, and the student should feel free to ask for advice. The thesis committee also has the general responsibility for monitoring the student's progress.

The thesis committee consists of a minimum of three members: two from the graduate faculty of the Biological Sciences Department (of which at least one must be a full-time faculty member) and one a full-time graduate faculty member from another degree-granting department. Associate Graduate Faculty from the Florida Fish and Wildlife Conservation Commission, Harbor Branch Oceanographic Institution, and the Smithsonian Marine Station at Fort Pierce can serve as members but not chairs of committees. As members of the Department of Biological Sciences, Associate Graduate Faculty cannot serve as outside members. Students should complete and submit Progress Form "II. Formation of Thesis or Dissertation Committee" (see Appendix). Changes to the Committee, after the thesis proposal has been approved and accepted, are not permitted.

Thesis Research Proposal. The thesis proposal serves the purpose of explaining the intended research in sufficient detail for the thesis advisor and thesis committee to ensure that the proposed research meets acceptable scientific standards. The thesis committee will evaluate the scope, experimental design, statistical methods, originality, feasibility, and significance of the research. If the research drastically changes direction or emphasis, the student must file an
amendment to the proposal or rewrite the proposal. In either case, the entire thesis committee must review the amended or new proposal.

The proposal follows the general format described below:

- **Title page (project title, course number, student's name)**
- **Introduction, including a review of the literature**
- **Description of the goals of the proposed research**
- **Hypotheses to be tested**
- **Materials and methods**
- **Projected collection and analysis of results**
- **Time line**
- **Budget**
- **References in full bibliographic form (see pp. 54-55)**

Once the proposal is acceptable to the advisor, the student should distribute copies of the proposal to the thesis committee and schedule a meeting time at least two weeks later.

**Proposal Defense.** The proposal defense is a research oriented oral exam that emphasizes the proposed research and related research literature. The thesis committee's responsibility is to evaluate the intellectual preparedness of the student, the scientific merit of the proposed research, and to insure that appropriate facilities, expertise and resources are available to successfully conduct the research. A timetable of milestones is also discussed. When the oral exam is successfully completed and the thesis proposal has been approved by the thesis committee, a signed copy of Progress Form "III. Thesis/Dissertation Title and Proposal Approval" (see Appendix) is attached to the proposal as the approval page. After approval of the proposal, a student may then register for thesis research (BIO 5999) providing the GPA for formal coursework is 3.0 or greater.

**Progress Toward the Degree.** All students are expected to make reasonable progress toward the degree. Once the thesis proposal is filed and research begins in earnest, a research report is required each semester, until graduation, describing methodologies used, data collected, problems encountered, and plans for the following semester. The report is distributed to the thesis advisor as well as to each member of the thesis committee for review. Any member of the committee may request a meeting with the student for purpose of further discussing the report. A copy of the graded report ("S" or "U") is forwarded to the GPC and becomes part of the student's permanent file. This evaluation process must be completed and the report forwarded to the GPC by the Friday of finals week. (See format for report on page 9.)

If satisfactory progress has not been made (a grade of "U") or the thesis is not completed within 2 yr of submitting the thesis proposal, the results of a review by the thesis committee will be presented with recommendations to the GPC. The GPC will decide what actions, if any, are required and may transmit its recommendations through the Department Head to the Graduate Programs Office.

**Thesis Research.** Students should pursue research vigorously and with constant consultation with the advisor. The research should be original and significant. During the period of thesis research, the student should meet periodically (twice per academic year) with the
advisory committee together or with the members separately to discuss thesis progress. The student, advisor and committee will decide on the frequency and format of such meetings.

Students who are engaged in thesis work must continuously register for 3 semester credits of BIO 5999, Thesis in Biological Sciences, each semester until graduation. For each thesis course, the student will receive either an "S" (satisfactory progress) or a "U" (unsatisfactory progress) grade. "U" grades will not be changed and will remain on the transcript but will not be used in computing the student's cumulative grade point average. When the thesis is accepted, 6 credits of "S" grades will be assigned P (Pass) as determined by the unanimous approval of the advisory committee.

Preparation of Thesis. Great care should be taken in the preparation of the thesis. The writing should be clear and grammatically correct. Methods, results, and conclusions should be described thoroughly. Data should be analyzed carefully as to significance. The format for the thesis must follow the example given in this handbook (see pp. 36). The thesis should be written on a computer/word processor and printed with a laser or other high-quality printer.

Preliminary copies of the thesis should be submitted to the advisory committee at least 4 weeks in advance of the proposed date of the final oral examination. Moreover, the candidate cannot defend the thesis until the thesis is generally acceptable to each committee member prior to the scheduling of the final oral examination. Thus, the student and advisor must discuss the corrections and revisions in the thesis with each committee member to determine whether the thesis is ready for the defense. Under no circumstances will the exigencies of forthcoming employment or other personal circumstances shorten the thorough and critical appraisal of the thesis by the thesis committee.

Master's Thesis Examination. When the thesis is near final form, it is approved by the thesis advisor for circulation to the thesis committee. The thesis committee must receive the complete thesis 4 weeks before the anticipated defense date. The student should consult with the thesis committee about the thesis content and make changes and corrections in a timely fashion. When all members of the committee agree that the thesis is ready to be defended (that is, the thesis meets the committee's requirements as to form and substance), the thesis defense may be scheduled. Two forms must be submitted to schedule the final thesis defense. First, a completed Progress Form "V Approval for Thesis/Dissertation Presentation and Final Exam" (see Appendix) is submitted to the GPC early enough that the Graduate Program’s 2-week deadline for final exam announcements can be met. Form V is also required to schedule the research seminar. Once Form V is approved, the "Notice of Thesis or Dissertation Defense and Oral Examination" form (see Appendix) is prepared by the Administrative Secretary and submitted to the Graduate School. This form must be in the Graduate School Office a minimum of two weeks prior to the exam.

The master's examination is a defense of the thesis consisting of two parts: a seminar and final oral exam. The first is a public seminar that is open to all faculty and students. The thesis advisor is responsible for scheduling (time and place) and for posting notices of the seminar. At the seminar, the student presents his/her research in its entirety and fields any questions and comments from the general audience. The second part of the defense, the final oral exam, is scheduled for a date following the seminar. The student meets privately with the thesis committee and any graduate faculty who wish to attend. The student answers any questions or
suggestions on the research that the faculty may have about the completeness of the thesis. Once
the thesis committee unanimously approves the thesis, the thesis advisor submits the master's
Examination Report form (see Appendix) to the Graduate Programs Office, notifying them of the
successful completion of the exam and that all degree requirements have been met.

After successfully defending the thesis, the student must prepare the thesis in final form
and submit it to the thesis committee and the Department Head for final approval and signing.
The Department Head should receive the thesis at least 3 days before the end of the semester.
Instructions for submitting the completed thesis are available from the Graduate Programs
Office.

If the student fails the thesis examination (i.e., the committee is not unanimous in its
opinion of the thesis or the student's performance), the exam must be retaken after a reasonable
length of time has been spent in preparing for re-examination. The thesis committee decides
what constitutes a "reasonable length of time," given that the re-examination is conducted within
3 months of the initial exam. The student's thesis committee will determine the form that the re-
examination will take, which will depend on the extent of failure. Failure of the re-examination
will result in dismissal from the program.

Student Progress Forms. The student will receive a packet of student progress forms at
his/her first meeting with the thesis advisor. This consists of 5 forms that track the student's
progress towards the master's degree. The forms include:
I. Preliminary Conference
II. Formation of Thesis or Dissertation Committee
III. Thesis/Dissertation Title and Proposal Approval
IV. Admission to Candidacy
V. Approval for Thesis/Dissertation Presentation and Final Exam
Each form must be completed and approved by the GPC in sequence.

Recommended Sequence for Completion of M.S. Requirements. The following list
summarizes landmarks of progress that should be followed as closely as possible.

1. Select thesis advisor and be accepted into a research laboratory.

2. Arrive at Florida Tech.

3. Meet with thesis advisor for preliminary conference, selection of courses for the first
   semester of study, and completion of Progress Form I; submit to GPC.

4. Prepare and submit a Program Plan to GPC for approval.

5. Complete requirements for admission to candidacy.

6. Complete Progress Form II, and submit to GPC.

7. Select thesis committee and submit Progress Form III to GPC for approval. Form III
   includes a title and brief description of proposed research.
8. Prepare thesis proposal and defend before the thesis committee. Submit Progress Form IV with approved proposal to GPC.

9. Complete classes.

10. Complete research.


12. Obtain approval of thesis advisor to distribute thesis to committee.

13. Schedule seminar and final examination with the Graduate School.

14. Obtain approval of the thesis committee and Department Head of thesis in final form.

15. Submit at least two (2) copies of the completed and approved thesis to the Graduate Program's Office. Please consult with your advisor for any needed extra copies.

16. Check out from advisor's laboratory, departmental office and the stockroom; thesis advisor will notify GPC that all data have been submitted and equipment returned.

**MASTER OF SCIENCE IN BIOTECHNOLOGY.** The Master of Science in Biotechnology incorporates our strengths in marine biology, ecology, natural products chemistry, molecular biology and biochemistry to provide a path for students who aspire to learn biotechnology and earn jobs in industry but who are not interested in a traditional thesis-based master's degree. The program emphasizes those areas of biotechnology related to microbiology, natural products chemistry, and molecular biology most favored by industry with a particular focus on the marine environment.

Rather than doing thesis research, students in this program will have the opportunity to include internships in industrial laboratories as part of their degree training. This program provides for a well-trained, master's level technician with strong communication skills.

**Admission Requirements.** Prospective students must have a B.S. degree in biology, chemistry, biochemistry or a related field. Applicants deficient in organic chemistry, genetics, biochemistry, and microbiology will be required to take these undergraduate courses prior to starting the Master of Science in Biotechnology program.

**Degree Requirements.** The non-thesis option requires the satisfactory completion of 30 credit hours, including formal courses (6 credit hours of research may substitute for 6 credits of formal course work), seminars (BIO 5990) and up to 12 credit hours of industrial internship (BIO 5997) and/or summer laboratory experience (BIO 5537) at Florida Tech. A project report on the research experience is written, presented and defended before a committee. The composition of the committee will be similar to the master’s degree committee. The committee may ask questions relating to previous coursework.
Curriculum. Students are required to take Cell and Molecular Biology (BIO 5501), Molecular Genetics (BIO 5576), and Laboratory Methods (BIO 5016) in addition to at least one of the following three-credit hour courses:

- BIO 5012 Protein Biotechnology.................................................. 3
- BIO 5014 Plant Biotechnology...................................................... 3
- BIO 5539 Microbial Biotechnology............................................... 3

Students must also register for BIO 5990 Biological Sciences Seminar for zero (0) credits.

Remaining restricted electives include graduate-level biotechnology courses that may be offered by departments other than biological sciences. Coursework is selected under the direction of the student’s adviser and approved by the Graduate Program Committee and the department head. Students must complete and submit a Program Plan for approval (see page 76). The program concludes with a final program examination (oral).

Electives:

- **Highly recommended, not required:**
  - Bio5997 Industrial Internship, 6
  - Bio5995 Biological Research, 3

Electives - considered to be biotechnology related:

**Definition of Biotechnology related classes:** The class to be considered as “Biotechnology related” should include materials or skills/methods/technologies that strengthen your overall competence in a career of cellular, molecular, and/or atomic level of biological and biomedical research. Up to 6 credits of undergraduate level courses are allowed, following the guidelines given here and below. An undergraduate level class (3000 or 4000) taken at FIT must be approved using the appropriate form from Graduate Programs (Permission to enroll in an Undergraduate Course). In addition, you may not take a course that is the same as one taken for undergraduate credit.

I: Any class that is 3000 level or above offered by
(1) Faculty in the cell and molecular biology program of the Biology Department
(2) Chemistry Department and Physics Department, especially classes involving instrumentations;
(3) Biomedical Engineering Department, Chemical Engineering Department, Computer Science Department, and Mechanical Engineering Department.

II: Graduate students are encouraged to take a scientific writing class. e.g. COM 5003 Preparing Academic Documents, 3; COM 5003 Preparing Academic Documents, 3

III: Those students interested in a management position for a biotechnology-related firm are directed to take one class from the business school.

**Possible Elective courses for the Biotech program**

- BIO 4015 Protein Analysis, 3
- BIO 4150 Special Topics Molecular Biol:Genome Instability & Human Disease, 3
- Bio 4201 Immunology
- Bio 4209 Molecular Biology of Plants
- Bio4210 Plant Physiology
- Bio5029 Chemical Ecology, 3
- Bio5031 Conservation Genetics, 3
- BIO 5070 Physiological Ecology, 3
- Bio 5080 Mechanisms of Biological Clocks, 3
Bio5085 Biological Imaging, 3
Bio5210 Applied Physiology, 3
BIO 5502 Mol Bio Signal, 3
BIO 5515 Pharmacol & Drug Design, 3
BIO 5522 Bioinformatics, 3
Bio5537 Applied Biotechnology, 6
Bio 5545 Growth and Division of Cells: Prokaryotes, 3
Bio 5546 Growth and Division of Cells: Eukaryotes, 3
Bio5569 Genomic Instability and Human Disease, 3
Bio 5570 DNA Structure and Function, 3
BIO 5572 DNA: Critical Analysis, 3
Bio5573 Scientific Analysis, Writing, and Presentation, 3
BIO 5575 Biology of Cancer, 3
Bio5576 Molecular Genetics, 3
BIO 5585 Protein Struct & Function, 3
Bio5600 Advanced Plant Physiology, 3
Bio 5605 Plant Cell Studies, 3
BIO 5630 Sensory Biology, 3
Bio 5725 Pathogenic Bacteriology, 3

BME 4320 Biomedical Engineering in global health
BME 5259 Medical Imaging, 3
BME 5569 Biomaterials and Tissue Regeneration, 3
BME 5702 Biomedical Applications in Physiology, 3
BME 5710 Orthopedic Biomechanics, 3
BME 5740 Cellular Mechanics, 3

BUS 5450 Organizational Behavior, 3
BUS 5601 Essentials of Bus Development 3 (summer)

CHE 4250 Introduction to Biochemical Engineering, 3
CHE 5110 Equilibrium Thermodynamics, 3
CHE 5567 Nanotechnology, 3
CHE 5569 Biomaterials & Tissue Regeneration, 3
CHM 5507 Natural Products, 3
CHM 5304 Adv Analytical Chemistry, 3
CHM 5018 Spc Top in Inorganic Chem: Green Chemistry, 3

CHM 3001 Physical Chemistry 1, 3
CHM 3002 Physical Chemistry 2, 3
CHM 3011 Physical Chemistry Laboratory 1, 2
CHM 3012 Physical Chemistry Laboratory 2, 2
CHM 3301 Analytical Chemistry 1, 3
CHM 3302 Analytical Chemistry 2: Instrumentation, 3
CHM 3311 Analytical Chemistry Laboratory 1, 2
CHM 3312 Analytical Chemistry 2: Instrumentation Laboratory, 2
CHM 4550 Polymer Chemistry, 3
CHM 4700 Physical Biochemistry, 1
CHM 5114 Applied Optical Spectroscopy, 3
The following ESL do not count toward your degree; however, some students may be required to take one or more before beginning the academic program.
ESL 0343 Intensive Listening, 3
ESL 0345 Intensive Writing, 3
ESL 0402 Advanced Oral Communication, 3
ESL 0403 Advanced Listening Communication, 3
ESL 0404 01 Advanced Reading, 3
ESL 0405 Advanced Writing

MASTER OF SCIENCE IN CONSERVATION TECHNOLOGY. The Master of Science in Conservation Technology prepares the student either for a professional career or for further graduate study. This goal is achieved through a balance of coursework and research activities.

Admission Requirements. General admission requirements and the process for applying are presented in the Academic Overview section of the University Catalog. For this nonthesis program, students should have an undergraduate degree that includes coursework in introductory biology, calculus, statistics, ecology and zoology, as well as three classes in each of physical science, the humanities and social science/liberal arts.

Degree Requirements. The Master of Science in Conservation Technology is conferred upon students who successfully complete 30 credit hours of approved curriculum as outlined below. A minimum of one course from each of the seven listed categories must be successfully completed. No more than two 4000-level courses may be used to satisfy degree requirements. The listing here is not intended to be exhaustive but to show possible coursework for each category.

**Botany**
BIO 5020 Field Ecology............................................................. 3
BIO 5039 Plant Systematics and Biogeography.............................. 3
BIO 5060 Biology and Ecology of Seagrasses............................... 3
BIO 5065 Natural History of the Indian River Lagoon.................... 3

**Communication**
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 5510</td>
<td>Current Topics in Ecology</td>
<td>3</td>
</tr>
<tr>
<td>BIO 5573</td>
<td>Scientific Analysis, Writing and Presentation</td>
<td>3</td>
</tr>
<tr>
<td>ISC 5016</td>
<td>Presenting Science or COM 5xxx</td>
<td>3</td>
</tr>
<tr>
<td><strong>Policy, Administration and Law</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BUS 4426</td>
<td>Environmental and Resource Economics</td>
<td>3</td>
</tr>
<tr>
<td>ENS 5701</td>
<td>Environmental Regulation and Impact Assessment</td>
<td>3</td>
</tr>
<tr>
<td>ISC 4000</td>
<td>Applied Sustainability</td>
<td>3</td>
</tr>
<tr>
<td><strong>Quantitative Sciences</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIO 4517</td>
<td>Introduction to Modeling for Ecology and Biology</td>
<td>3</td>
</tr>
<tr>
<td>BIO 5028</td>
<td>Design and Analysis of Ecological Studies</td>
<td>3</td>
</tr>
<tr>
<td>BIO 5075</td>
<td>Multivariate Analysis in Biology</td>
<td>3</td>
</tr>
<tr>
<td><strong>Wildlife Biology</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIO 4641</td>
<td>Biology of Marine Mammals</td>
<td>3</td>
</tr>
<tr>
<td>BIO 5011</td>
<td>Ornithology</td>
<td>3</td>
</tr>
<tr>
<td>BIO 5904</td>
<td>Field Biology and Evolution of the Galapagos Islands or BIO 4904</td>
<td>3</td>
</tr>
<tr>
<td><strong>Wildlife Management</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIO 4410</td>
<td>Community Ecology</td>
<td>4</td>
</tr>
<tr>
<td>BIO 5030</td>
<td>Conservation Biology</td>
<td>3</td>
</tr>
<tr>
<td><strong>Zoology</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIO 5031</td>
<td>Conservation Genetics</td>
<td>3</td>
</tr>
</tbody>
</table>

Additional credit hours would be selected from a 4000- or 5000-level course in BIO, ENS, OCN or from other sources at the adviser’s discretion. Recommended additional courses include GIS, remote sensing and biology summer field programs.

**FINAL PROGRAM EXAM FOR M.S. BIOTECHNOLOGY AND M.S. CONSERVATION TECHNOLOGY STUDENTS**

A final program exam (fpe) is required for all students in M.S. Biotechnology and M.S. Conservation Technology. As of the Fall 2017 semester, students who intend to take the final program exam need to formally register for the appropriate final program exam course in his or her department (BIO 0002). This will assure that students who have completed all of their course work prior to the exam are still registered and able to maintain their student status, and will also permit the monitoring of student payment for the exam (if appropriate) as well as provide the ability to generate statistics about success rates for students taking the fpe.

Students will register online. The Registrar’s Office will run a list of students registered in each fpe course, which will be shared with the department. Students who do not have at least a 3.0 overall grade point average will be informed that they are not eligible to sit for the exam. Once the exam is completed, grades for the exam will be entered by the appropriate department. The grading mode will be pass/fail, but will not result in academic sanctions, nor will grades be recorded on the academic transcript except as provided by Graduate Policy 1.6.5. Students who are not registered for any other course except the fpe course will be charged the final program examination fee in compliance with Graduate Policy 1.6.4.

**MASTER’S TO PH.D. TRANSFER POLICY** Any current Master’s student wishing to upgrade to the Ph.D. must fulfill the following conditions: 1) the MS student must reapply to the
department for a place in the Ph.D. program; 2) the student’s advisor must send a supportive letter to the GPC stating that the transfer is unanimously supported by the thesis committee and that the student has been fully counseled on the repercussions of the switch to the Ph.D. program. One repercussion is that the two years of M.S. eligibility for a TA will be subtracted from the normal five years of Ph.D. eligibility. 3) the student must have demonstrated sufficient progress that they would have completed the MS degree in a timely manner and with superior academic performance as determined by the GPC; 4) the student’s transfer must be approved by the GPC; 5) the upgraded student must then pass the doctoral qualifying exam within the appropriate time for a doctoral student beginning a program coincidently with the start date of the student’s master’s program (window opens 3rd semester and closes at end of 5th semester). Master’s students contemplating transferring to the Ph.D. program must do so early in their 2nd year of residence; otherwise, the comprehensive exam deadlines will be missed. It is recommended that a student complete the Master’s program before making the transfer if there is a danger of missing the comprehensive exam deadlines.

**DOCTOR OF PHILOSOPHY** The purpose of the Ph.D. program is to train students for careers in research and teaching. Demonstration that the candidate has achieved the appropriate level of knowledge is submission of a dissertation, which should be a major contribution in the field, indicating not only that the individual has a mature understanding of the particular field but also that the individual can design and execute original studies.

The Department of Biological Sciences offers opportunities for advanced study and research leading to the Doctor of Philosophy degree in Biological Sciences. The degree program is currently organized with an emphasis in Cell and Molecular Biology, Ecology and Conservation Biology, and Marine Biology. The Ph.D. degree in Biological Sciences is awarded to candidates who have 1) displayed an in-depth understanding of the subject matter and 2) demonstrated the ability to make an original contribution to knowledge in their field of specialty.

All prospective students must have a B.A. or a B.S. from an accredited university and a minimum GPA of 3.0 in all undergraduate coursework. An applicant with a graduate degree must have a minimum GPA of 3.2 for all graduate coursework. Entering students should have a GRE (analytical and verbal) score of no less than 1000. Exceptions can be made in cases with strong justification (e.g., high GPA and/or extensive research experience). Applicants whose native language is not English must score at least 550 on the TOEFL and 230 on the TSE exam.

**Course Requirements.** (Applicable to students who begin FA06 or later) The doctoral degree requires a minimum of 73 semester hours beyond the baccalaureate degree. The curriculum consists of 1) at least 42 semester hours of coursework and 2) a maximum of 30 semester hours of Dissertation in Biological Sciences (BIO 6999, 3 credit hours). Biological Sciences Seminar (BIO 5990, 0 credit hours) is required each semester, and Biological Research Seminar (BIO 5991, 1 credit hour) is required the semester of graduation. The 42 course hours must include at least 18 semester hours of formal classroom courses and, with approval, may include up to 6 credit hours of 4000 level undergraduate courses. The balance of the 42 course hours may be taken as Biological Research (BIO 5995) or Biological Research Rotation (BIO 5998). Courses that are considered "deficiencies" in a student’s prior education cannot be used in fulfilling the requirements for a graduate degree; they should be identified on the program plan as deficiencies and taken above and beyond the requirements.
Summary of course requirements:

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal Course Work Beyond Bachelor's Degree</td>
<td>18-42</td>
</tr>
<tr>
<td>Biological Research or Biological Research Rotation</td>
<td>0-24</td>
</tr>
<tr>
<td>Doctoral Dissertation (maximum)</td>
<td>30</td>
</tr>
<tr>
<td>Biological Research Seminar (semester of graduation)</td>
<td>1</td>
</tr>
<tr>
<td>Biological Sciences Seminar (each semester of attendance)</td>
<td>0</td>
</tr>
</tbody>
</table>

A minimum of 73 credits beyond the bachelor's degree is required.

At least 12 semester credit hours of coursework and all of the research/dissertation credits must be taken at Florida Tech. At least 15 semester credit hours of dissertation must be taken beginning with the term in which the student is admitted to candidacy. Students matriculating with a master's degree may transfer up to 30 hours course credit provided the courses are comparable to core and elective courses. A grade lower than "B" in any transfer graduate course will not be counted toward the 73 hours. Thesis and research courses cannot be transferred toward the Ph.D. degree.

Students who began SU06 or earlier must take 24-48 credits of formal coursework for a total of 79 credits. All other credits remain the same.

Program Plan. Students may pursue one of three program plans depending upon their field of interest. Each program plan consists of four parts: (1) Core Curriculum (required of all students in that program); (2) Colloquia and Seminars; (3) Electives; and (4) Research and Dissertation. Students must have the prerequisite for any core course they select; otherwise they must take the prerequisite as a deficiency. Core courses are not deficiencies. A signed and approved program plan must be submitted to the Registrar’s Office no later than 1 month prior to the time 9 semester credit hours of graduate course work have been completed. See section 2.2.1 of the Graduate Programs Policies and Procedures Manual.

Program Plan for Cell and Molecular Biology (Major Code 9021).

Core Curriculum

Doctoral students may satisfy part or the entire core course requirement by transfer of equivalent graduate courses taken in fulfillment of a Master of Science or similar degree.

BIO 5501 Cell and Molecular Biology (3 credits)
BIO 5576 Molecular Genetics (3 credits)

Seminars

BIO 5990 Biological Sciences Seminar (0 credit)
BIO 5991 Biological Research Seminar (1 credit)

Electives Course offerings are dynamic; please consult this list and a current catalog
BIO 5012 Protein Biotechnology (3 credits)
BIO 5080 Mechanisms of Biological Clocks (3 credits)
BIO 5501 Cell and Molecular Biology (3 credits)
BIO 5502 Molecular Biology of Signal Transduction (3 credits)
BIO 5521 Regulation of Animal and Plant Development (3 credits)
BIO 5522 Bioinformatics, Genomics and Proteomics (3 credits)
BIO 5535 Current Topics in Biotechnology (3 credits)
BIO 5545 Growth and Division of Cells: Prokaryotes (3 credits)
BIO 5546 Growth and Division of Cells: Eukaryotes (3 credits)
BIO 5570 DNA Structure and Function (3 credits)
BIO 5575 Biology of Cancer (3 credits)
BIO 5585 Protein Structure and Function (3 credits)
BIO 5600 Advanced Plant Physiology (3 credits)
BIO 5605 Plant Cell Studies (3 credits)
BIO 5725 Pathogenic Bacteriology (3 credits)
BIO 5815 Molecular Studies of Marine Biodiversity (3 credits)
ISC 5016 Presenting Science (3 credits)

(See also electives and core curriculum for Marine Biology and Ecology and Conservation Biology programs for additional choices)

Research and Dissertation

BIO 5995 Biological Research (3 credits)
BIO 5998 Biological Research Rotation (3 credits)
BIO 6999 Dissertation in Biological Sciences (3 credits)

Program Plan for Marine Biology (Major Code 9021).

Core Curriculum

Doctoral students may satisfy part or the entire core course requirement by transfer of equivalent graduate courses taken in fulfillment of a Master of Science or similar degree.

BIO 5028 Design and Analysis of Ecological Studies (3 credits)

Seminars

BIO 5990 Biological Sciences Seminar (0 credit)
BIO 5991 Biological Research Seminar (1 credit)

Electives Course offerings are dynamic; please consult this list and a current catalog

BIO 4515 Ecology of Coral Reefs (3 credits)
BIO 4517 An Introduction to Modeling for Ecology and Biology (4 credits)
BIO 4904 Field Biology and Evolution of the Galapagos Islands (4 credits)
BIO 5005 Comparative Biology of Invertebrates (3 credits)
BIO 5010 Ichthyology (3 credits)
BIO 5022 Coral Reef Ecology (3 credits)
BIO 5025 Ecology of Salt Marsh and Mangrove (3 credits)
BIO 5030 Conservation Biology (3 credits)
BIO 5031 Conservation Genetics (3 credits)
BIO 5036 Explorations of Animal Behavior (3 credits)
BIO 5037 Navigation and Orientation of Marine Animals (3 credits)
BIO 5042 Feeding Ecology of Fishes (3 credits)
BIO 5047 Ecological Physiology of Fishes (3 credits)
BIO 5060 Biology and Ecology of Seagrasses (3 credits)
BIO 5065 Natural History of the Indian River Lagoon (3 credits)
BIO 5085 Biological Imaging (3 credits)
BIO 5090 Natural History and Management of the Upper St. Johns River (3 credits)
BIO 5120 Ecology of Tropical Marine Communities (3 credits)
BIO 5140 Coral Ecology (3 credits)
BIO 5510 Current Topics in Ecology (3 credits)
BIO 5573: Scientific Analysis, Writing and Presentation (3 credits)
BIO 5630 Sensory Biology (3 credits)
BIO 5813 The Biology of Sea Turtles (3 credits)
ENS 5800 Limnology 1 (3 credits)
ENS 5801 Limnology 2 (3 credits)
ISC 5016 Presenting Science (3 credits)
OCN 5102 Marine Phytoplankton (3 credits)
OCN 5103 Marine Zooplankton (3 credits)
OCN 5104 Marine Benthos (3 credits)

(See also electives and core curriculum of Cell and Molecular Program and Ecology and Conservation Biology Programs for additional choices)

Research and Dissertation

BIO 5995 Biological Research (3 credits)
BIO 5998 Biological Research Rotation (3 credits)
BIO 6999 Dissertation in Biological Sciences (3 credits)


Core Curriculum

Doctoral students may satisfy part or the entire core course requirement by transfer of equivalent graduate courses taken in fulfillment of a Master of Science or similar degree.

BIO 5028 Design and Analysis of Ecological Studies (3 credits)

Seminars

BIO 5990 Biological Sciences Seminar (0 credit)
BIO 5991 Biological Research Seminar (1 credit)

Electives Course offerings are dynamic; please consult this list and a current catalog

BIO 4515 Ecology of Coral Reefs (3 credits)
BIO 4517 An Introduction to Modeling for Ecology and Biology (4 credits)
BIO 4904 Field Biology and Evolution of the Galapagos Islands (3 credits)
BIO 5011 Ornithology (3 credits)
BIO 5020 Field Ecology 1 (3 credits)
BIO 5021 Field Ecology 2 (3 credits)
BIO 5023 Field Ecology 3 (3 credits)
BIO 5024 Field Ecology 4 (3 credits)
BIO 5025 Ecology of Salt Marsh and Mangrove (3 credits)
BIO 5030 Conservation Biology (3 credits)
BIO 5031 Conservation Genetics (3 credits)
BIO 5034 Paleoclimatology and Paleoeconomy (3 credits)
BIO 5060 Biology and Ecology of Seagrasses (3 credits)
BIO 5065 Natural History of the Indian River Lagoon (3 credits)
BIO 5070 Physiological Ecology (3 credits)
BIO 5090 Natural History and Management of the Upper St Johns River (3 credits)
BIO 5120 Ecology of Tropical Marine Communities (3 credits)
BIO 5140 Coral Ecology (3 credits)
BIO 5420 Pre-Columbian Ecosystems (1 credit)
BIO 5421 Neotropical Archeoecology (3 credits)
BIO 5510 Current Topics in Ecology (3 credits)
BIO 5573: Scientific Analysis, Writing and Presentation (3 credits)
ENS 4010 Geographical Information Systems (3 credits)
ENS 5001 Global Environmental Problems and Solutions (3 credits)
ENS 5701 Environmental Regulation and Impact Assessment (3 credits)
ISC 5016 Presenting Science (3 credits)
OCN 5204 Marine Pollution (3 credits)
OCN 5801 Coastal Systems Planning (3 credits)
OCN 5803 Legal-Environmental Relationships (3 credits)

(See also electives and core curriculum of Cell and Molecular Program and Marine Biology Program for additional choices)

Research and Dissertation
BIO 5995 Biological Research (3 credits)
BIO 5998 Biological Research Rotation (3 credits)
BIO 6999 Dissertation in Biological Sciences (3 credits)

Dissertation Committee. The committee consists of 5 graduate faculty. Four must be from Biological Sciences and three of the four must be full time faculty on the Melbourne campus. Only one Associated Graduate Faculty (adjunct) is permitted to serve on any committee; the committee chair must be a member of the full time Graduate Faculty. The fifth member of the committee is the outside member.

The outside member is a full-time faculty member in an academic department at Florida Tech that is not Biological Sciences. The outside member cannot hold adjunct status and they cannot be affiliated in any official way with Biological Sciences. The role of the outside member is as follows: 1) to serve as a representative of the university to ensure that the rules of the university are followed, 2) to serve as an advocate for the student regarding committee
proceedings, 3) to provide an additional level of research expertise and perspective from outside
the area of Biological Sciences.

If desired, additional committee members are permitted to serve on a graduate committee
based on their appropriate research expertise and willingness to assist the student. Additional
members may be solicited from any academic or industrial institution as is deemed appropriate
by the student in consultation with his/her advisor. Additional members are not permitted to vote,
but are invited to attend all meetings concerning the student’s advancement, although their
attendance is not required.

Committee members are selected in consultation with the dissertation advisor and with
approval of GPC. The dissertation advisor chairs the committee. The dissertation committee has
the responsibility for general supervision of the student's research and ultimately of certifying to
the graduate dean that an acceptable dissertation has been submitted and that all degree
requirements are completed. Although the dissertation advisor provides day-to-day guidance to
the student, all members of the committee are available for consultation, and the student should
feel free to ask for advice. The dissertation committee also has general responsibility for
monitoring the student's progress.

Changes in Committee. After the student has been advanced to candidacy (passed the
comprehensive examination and submitted an approved research proposal) changes in the
composition of the Doctoral Committee will be permitted only under unusual circumstances. If
personal or professional considerations suggest that such action would be in the best interest of
the student, committee members or the university, any Committee member (including the Major
Advisor) may voluntarily withdraw from the Committee by notifying the Major advisor, the
Department head and the Dean of the College of Science in writing. The student will not be
permitted to register for more than one additional semester following withdrawal of a Committee
member unless a full Committee is re-established. To re-establish the Committee, the Major
Advisor nominates the new Committee member and submits their name, in writing, to the GPC
committee for approval.

The replacement of a member of the Doctoral Committee for any reason other than
voluntary withdrawal will be permitted only after review and approval of a written request of
such actions by the GPC committee. Such requests must originate from the Department Head.

Comprehensive Examination. The Department of Biological Sciences requires that each
Doctoral Student pass a Comprehensive Examination administered by an Examination
Committee. The purpose of the comprehensive examination is to determine the student
knowledge base within the chosen area of expertise and to evaluate the ability of the student to
pursue independent research by answering written questions within their area of expertise. A
student should complete the Comprehensive Examination by the end of his/her second year.
Without exception, it must be completed by 2.5 years after starting the program as a regular
graduate student.

Request to Take Comprehensive Examination. The request to take the comprehensive
examination is made in writing (see form, p. 83) to the GPC during the first week of the semester
that the exam is administered. The student, dissertation advisor and the committee must sign this
request. Student must be in good academic standing and have completed more than 80% of all formal coursework in the program plan at the time of request.

Examination Committee. The Examination Committee is comprised of the student’s Dissertation Committee and must contain a member of the GPC, who is not the chair. A GPC member will be assigned to the Examination committee if no other committee member, who is not the Chair, is a member of the GPC. The committee will abide by GRADUATE POLICY 2.4.1 Committee Participation (see below).

Administration of the Examination. The Graduate Program Director is the Administrator of the examination. The responsibility of the Administrator will be to:

- Coordinate with the Examination committee for administering the Exam
- Collect the graded exams from the faculty and ensure that a written evaluation accompanies the graded exam
- File an exam report with the Department Head
- Notify the student and advisor, in a timely fashion and in writing of the results of the examination

Examination Structure

Students will be given two questions, which are developed by the student’s Dissertation committee with input from any interested Biology Department faculty. One of the questions will test a basic core of knowledge within the student area of study (e.g. Cell and Molecular Biology, Marine Biology, Ecology). The second question will be tailored more specifically to the student's specific field of interest. The advisor will be present to help determine the appropriate area of questioning, particularly for the second question. After the questions are written, they are given to the student. The student will have two weeks to write their answers to the questions. Each question will be graded by the members of the dissertation committee. To pass the exam, the student must have the unanimous approval of the dissertation committee, including the outside member (See Grad policy 2.4.3). If the student fails, they can retake the exam the following semester. Students will be advised following a failure to help them prepare for the retake. One advantage to this method is that the dates of each 'event' will be set at the beginning of the semester.

The exam will be administered by the GPC, who will interact with each faculty group. Here is a sample timeline, which will be followed by all students taking the exam that semester:

1) Week 1 of the semester, student applies to take the exam.
2) Weeks 2-3, the committee draft questions tailored to the student.
3) Week 4, the student receives the questions.
4) Week 6, the students submits the answers
5) Week 8, Faculty return graded exams with written comments.
6) Week 9, Students are informed in writing of pass or fail.
The entire doctoral committee must participate in the comprehensive examination. In the case of the outside member of the committee, this member should be encouraged, but not required, to submit written questions to the committee chair. All members of the committee are required to attend the entirety of any oral examination.

GRADUATE POLICY 2.4.2 Oral Examination Announcement
The Office of Graduate Programs must be notified at least two weeks in advance of the examination. The examination specifics will then be included in the appropriate weekly schedule of oral examinations, which is published by the Office of Graduate Programs and sent to all members of the graduate faculty. The examinations will be open only to members of the graduate faculty.

GRADUATE POLICY 2.4.3 Passed Examination
To pass an examination, the student must have the unanimous approval of the committee. The examination must be passed at least one calendar year before the degree is awarded. An examination report must be submitted to the Office of Graduate Programs.

GRADUATE POLICY 2.4.4 Failed Examination
An examination report marked "FAILED" must be submitted to the Office of Graduate Programs if the student does not pass the examination. A student who does not pass the examination may, at the option of a majority of the committee, be allowed one opportunity to retake the examination after a suitable period of study. On the second failure by a student of the comprehensive examination, the Office of Graduate Programs will notify the registrar of the need to annotate the transcript as follows:

DOCTORAL COMPREHENSIVE EXAMINATION FAILED [date of second failure]

At the time of the second failure, the student will be notified in writing that he or she will not be admitted to candidacy.

Dissertation Proposal. After the comprehensive examination is passed, the student presents a dissertation research proposal to the dissertation advisor and dissertation committee. The proposal should follow the format on pp 22-23. When the proposal is complete, the student schedules a proposal defense with the dissertation committee at least 2 weeks later.

The proposal defense is a broad research oriented oral exam that emphasizes the proposed dissertation research and related issues. The dissertation committee's responsibility is to evaluate the intellectual preparedness of the student for admission to candidacy, the scientific merit of the proposed research, and to insure that appropriate facilities, expertise and resources are available to successfully conduct the research. A timetable of milestones is also discussed. When the oral exam is successfully completed and the dissertation committee has approved the dissertation, the dissertation advisor will attach a signed Progress Form III. (Thesis/Dissertation Title and Proposal Approval) (see Appendix) to the proposal as its approval page and forward the proposal to the GPC for inclusion in the student's file.

Foreign Language Requirement. The Department of Biological Sciences does not require evidence of foreign language competence but strongly urges candidates to acquire reading ability in at least one language other than English.

Admission to Candidacy for the Ph.D. As soon as the comprehensive examination is passed and the dissertation proposal is approved, the student can apply for admission to candidacy. The advisor must Complete Progress Form "IV. Admission to Candidacy" and send it to the GPC for approval. A cumulative GPA of 3.2 is required for admission to candidacy.
After admission to candidacy, students must register for BIO 6999 - Dissertation in Biological Sciences (3 credits). Continuous enrollment in at least 3 credits of dissertation each semester, including summer, is required until graduation.

**Dissertation Research.** The doctoral research should represent a significant contribution to our knowledge of biology and should be of such quality that it will be acceptable for publication in a national or international journal. During the period of dissertation research, the student should meet with the dissertation advisor to discuss dissertation progress.

**Progress Toward the Degree.** All students are expected to make reasonable progress toward the degree. Once a student has been admitted to candidacy, he (she) has 5 yr in which to complete the research and defend the dissertation and graduate. If the degree is not completed within the 5 years, the comprehensive examination must be re-administered. The new exam will reflect developments of importance in the area of study occurring since the first examination as well as areas of general importance. As research begins in earnest, a research report is required each semester, describing methodologies used, data collected, problems encountered, and plans for the following semester (see page 9). The report is distributed to the dissertation advisor and to each member of the dissertation committee for review. Any member of the committee may request a meeting with the student for purpose of further discussing the report. A copy of the graded report ("S" or "U") is forwarded to the GPC and becomes part of the student's file. This evaluation process must be completed and the report forwarded to the GPC by the Friday of finals week.

If satisfactory progress has not been made (a grade of "U"), results of the review by the dissertation committee will be presented, with the recommendations, to the GPC. The GPC will decide what actions, if any, are required.

**Preparation of Dissertation.** The dissertation should be an excellent piece of scientific writing. The writing should be clear and grammatically correct. Methods, results, and conclusions must be described thoroughly. The format of the dissertation must follow the set of instructions for preparing thesis or dissertation that is included in this handbook. The dissertation advisor should distribute copies of the dissertation to the dissertation committee only after approval. The dissertation should be submitted to the committee a minimum of 4 wk prior to the anticipated date of the final exam.

**Final Examination.** A completed Progress Form V "Approval for Thesis/Dissertation Presentation and Final Exam" form (see Appendix), containing the required signatures, needs to be forwarded to the GPC for approval before the final exam can be scheduled. The request is submitted to the Graduate Programs Office at least 2 weeks prior to the exam, following procedures specified by the Graduate Programs Office.

The final exam for the Doctor of Philosophy degree consists of two parts: a seminar and a final oral exam. The first is a public seminar that is open to all faculty and students. The seminar coordinator posts notices of the seminar for that semester. At the seminar the student presents the research in its entirety and fields any questions and comments from the general audience. The second part of the defense, the final oral exam, takes place after the seminar. The student meets privately with the dissertation committee and any graduate faculty who wish to attend. The student answers any questions or suggestions on the research that the faculty may have about the
dissertation. Once the dissertation is unanimously approved by the dissertation committee, the dissertation advisor notifies the GPC and the Graduate Programs Office (see doctoral dissertation oral examination report form, Appendix) of the successful completion of the exam and that all degree requirements have been met.

Recommended Sequence of Events for Completion of Ph.D. Requirements. The following list summarizes the landmarks of progress that should be followed as closely as possible.

1. Select advisor and be accepted into a laboratory.
2. Arrive at Florida Tech.
3. Meet with advisor for preliminary conference, selection of courses for first semester of study, and completion of Progress Form I.
4. Submit a Program Plan to the GPC for review and approval.
5. Complete the majority of course work.
6. Select dissertation committee, 4 members (1 external), in cooperation with dissertation advisor.
7. Schedule, take, and pass written comprehensive examination administered by the GPC.
9. Complete Progress Form II. Admission to Candidacy, and submit to GPC for approval.
10. Complete classes.
13. Set date for dissertation defense and submit dissertation to committee with advisor's approval.
14. Notify Graduate School of exam date 2 wk in advance.
15. Submit 5 copies of the completed and approved dissertation to the Graduate Programs Office.
INSTRUCTIONS FOR PREPARING A PROPOSAL, THESIS, AND DISSERTATION

INTRODUCTION

The term thesis refers to the written manuscript submitted as a requirement for an M.S. degree at Florida Institute of Technology, and the term dissertation refers to that submitted for a Ph.D. degree. To avoid being cumbersome, the word thesis will be used throughout this guide for both.

The purpose of a graduate thesis in the sciences is to show others in your field that you are now capable of not only conducting original research but also communicating the results effectively to the scientific community. Your thesis will very likely be your first publication in the field, and as such becomes an especially important landmark in your career. A well-prepared thesis makes the resulting journal articles much easier to produce, lends a sense of credibility to the material, and, in general, reflects well on the department and university. Conversely, a thesis with misspellings, poor grammar, technical inconsistencies, and poorly prepared illustrations will make the preparation of any resulting journal article tedious, will make the reader wonder if the attention to scientific detail is equally sloppy, and will reflect poorly on the department and university and particularly the student.

CHOICE OF SUBJECT

Selecting a subject worthy of investigation is one of the most significant aspects of your graduate work. Such a topic should never be chosen without thoughtful consideration on your part and the approval of your graduate advisor.

The thesis must reflect a comprehensive understanding of the pertinent literature (which must be properly cited) and must express clearly and grammatically the method, significance, results, and interpretation of your research. The length of the completed manuscript should be no longer than is necessary to present all pertinent information. This length will, of course, vary widely depending on the research topic, nature of data, and the degree being sought.

The thesis should be a single unit of scholarly narrative, properly supported and documented, reporting your original work done under the supervision of a member of the graduate faculty (the advisor).

PROPOSAL PREPARATION

GENERAL INFORMATION. After preliminary approval by the advisor, one copy of the research proposal must be submitted to each member of your advisory committee. The proposal is a formal description of your projected research. It is designed to offer you an opportunity to demonstrate your ability to pursue the projected topic to a successful conclusion. The nature of the problem to be examined, the status of current research relating to the subject under consideration, the research method, the budget and the importance of the projected work should be carefully described in the proposal. A timeline or milestone chart indicating tasks and when they are to be completed should also be included. See p. 21 for additional information on proposal preparation.
All rules of style and format (such as those pertaining to word processing, references, and footnotes) that apply to the completed thesis also apply to the proposal.

**THESIS PREPARATION**

**STANDARDIZING PAGE AND TEXT FORMATS.** This manual is to be used as a style guide in answering questions regarding the text and page format of theses. The purpose behind these specifications is to achieve a uniform, consistent and professional appearance in all theses produced in the Biological Sciences Department at Florida Tech.

The formatting rules in this guide have been modeled after, and adapted from, two well-known style manuals:


These references should be consulted when questions arise that are not specifically covered by this manual. Use The thesis writer’s handbook for page style and format questions concerning the title page, approval page, the abstract, introduction, etc., and text format requirements for spacing, margins, indentations, etc. Use the CBE style manual for style and format questions concerning citing references in the text, list of references, illustrations (figures and tables), the use of units, and proper abbreviations.

Do not use past theses as examples of format and style. Not all theses have followed the rules, and the rules have changed over the years.

**Word Processor Specifications.** Select a 12 pt font with a plain-face type (Times New Roman or Square Serif) rather than script, italic, or some other ornamental style when printing your thesis. If there is doubt about the size or style of type, clarify the matter with the Department Head before preparing the manuscript. The same type style must be used throughout the paper; do not mix type styles; do not use bold face type for headings or legend titles. The font size must also be the same, including page numbers; but superscripts and subscripts may be struck in 10 pt font. Italics may be used for generic and specific names of organisms and anywhere italics are normally used (e.g., genes). The printer must produce letter-quality print, superscripts, and subscripts. A laser printer or other high-quality printer must be used. Do not justify the right margin; not all word processors do a good job without leaving very irregular spacing within the text line.

**Paper.** Print your thesis on at least 20-pound white paper (e.g., standard xerographic paper), not on lightweight paper or onionskin, since this will not feed automatically through a photocopier.

**Spacing and Indentions.** The text is double spaced throughout. Headings or the first line of text will begin 2 spaces below the page number. In preliminary pages, the text ends 2 spaces
above the page number. Single spacing (six lines per inch) is used only for specific, appropriate purposes, such as blocked inset quotations, itemized or tabular materials, figure and table legends, and literature cited (single space within the citation, double space between citations). Additional instructions on spacing are given in other sections.

The first sentence of each paragraph should be indented five spaces or 0.5 in indentation. Any quotation of six typed lines or fewer should use the same spacing as the narrative text. Quotations longer than six typed lines should be inset and single-spaced. Inset quotations do not require the use of quotation marks.

Margins. All typing and page numbers must fit within the margins (1.5 inch at the left, and 1.0 inch at the top, bottom, and right). If Microsoft Word is used, the following margin setup is recommended for all pages (including preliminary pages): top, 1.3 inch; bottom, 1.3 inch; left, 1.7 inch; right, 1.2 inch; header (where page number is printed in body), 1.0 inch; footer (where page number is printed in preliminary pages), 1.0 inch; gutter 0 inch. In addition to leaving one or two spaces around the margin to allow for expansion normally associated with the duplication process, this page setup gives the appearance of double spacing between the text and page numbers. All computer data, illustrations, and tables that lend themselves to reproduction on photographic or other acceptable paper must conform to the margins.

Pagination. Every page in the manuscript EXCEPT the title page and the approval page must be numbered. These 2 pages are considered to be pages i and ii, but no pagination numeral is shown on these 2 pages.

• Preliminary pages—lowercase Roman numerals (iii, iv, v, vi, etc.) are used. The first page on which a number appears is the abstract page, which is numbered iii and is placed right after the approval page.
• Text and supplementary pages—Arabic numerals are used. The first page of the narrative text begins with 1, and the numbering runs consecutively to the end of the manuscript.
• Pages are numbered consecutively, as are tables, figures, and equations. The only exception to this rule is when an appendix has tables, figures, and equations (i.e., Table A-1).

Begin every major division of a thesis on a new page. These major divisions are: Abstract, Dedication (optional), Acknowledgments, Table of Contents, List of Tables, List of Figures; each new section such as Introduction, Materials and Methods, Results, Discussion, Conclusions, Literature Cited, and Appendix.

Subheadings or subdivisions within chapters and sections do not start on a new page but are placed on the page wherever they appear in the development of the text. The only exception is when this produces what is termed an "orphan" (i.e., the last line of the page is the heading itself). In this case, start the heading on the following page.

Placement of Page Numbers. All preliminary page numbers (lowercase Roman numerals) are centered on a line 1.0 in from the bottom edge of the page. All other page numbers (Arabic numerals) are placed on a line, 1.0 in from the top of the page and even with the right-hand margin.
PARTS OF THE MANUSCRIPT. A thesis manuscript ordinarily has three main parts: (1) the preliminary pages, (2) the text, and (3) the supplementary pages.

Preliminary Pages. Include (listed in the order in which they appear in the thesis):

- Title page
- Approval page
- Abstract
- Acknowledgments (the Dedication page, if any, is placed directly before the Acknowledgments page)
- Table of Contents
- List of Tables (if more than one table is used)
- List of Figures (if more than one figure is used)

The Text. Includes (listed in the order in which they appear in the manuscript):

- Introduction
- Body of the thesis with the large divisions (Materials and Methods, Results, Discussion and/or Conclusion.)

Supplementary Pages. Include (listed in the order in which they appear in the manuscript):

- Literature Cited (required in all theses and dissertations)
- Appendices (if needed).

All preliminary page titles, all chapter designations and titles, and supplementary page titles are centered at the top of the page (two spaces below the page number) and are typed in capital letters. Section titles (when used in place of chapters) are typed in capital letters and are centered at the top of the page (two spaces below the page number). Examples of some of the major parts of the manuscript are presented in Fig. 1-4. Figures are for style, spacing, and format information only. They are not to be used as page or margin templates. Page setup and margins are considered in other sections of this guide.

Title Page. The title page must follow exactly the style, spacing, and form of the example in Fig. 1. Points to note particularly are:

- The title is typed in capital letters, double spaced (if the title is more than one line in length) and centered within the margins of the paper in an inverted pyramid style.
- There is no page number on the title page (although it is considered to be p. i).
- For the M.S. degree, the term `Thesis' is used instead of `Dissertation'.
- The full legal name of the author, without initials and without designation of profession, military rank, or marriage is listed as shown.
- The full name of the degree to be awarded (MASTER OF SCIENCE or DOCTOR OF PHILOSOPHY) and the major department (BIOLOGICAL SCIENCES) are written out in capital letters.
• Degrees are awarded in May and December. The appropriate month and year must be shown on this page.

**Approval Page.** The approval page, following exactly the style, spacing, and form of the example shown in Fig. 2, must bear the original signatures of all members of your advisory committee and the Department Head. Care should be taken to assure that they sign in black ink, since other colors do not reproduce well.

The number of members of your advisory committee determines the number of signature spaces on the page. The position (in terms of the committee) of each member of the committee must be indicated under each signature. The committee as listed on this page must include all the names indicated as being committee members on the exam announcement for the defense.

Particular points to note are:

- The title is typed in capital letters, double spaced (if more than one line on length), and centered within the margins of the paper in the inverted pyramid style.
- The line “Approved as to style and content by:” is lined up with the signature line, not centered.
- There is no page number on the approval page (though it is considered to be p. ii).
- For the Ph.D. degree, the word "DISSERTATION" is used instead of "THESIS".
- Your full legal name without initials and without designation of profession, military rank, or marriage is listed as shown.
- If your committee has co-chairpersons, then each is listed by position as "Co-chairperson" of the committee.
- If the Department Head serves also as a member or as chairperson or co-chairperson of your advisory committee, so indicate.
- Degrees are awarded in May and December. The appropriate month and year must be shown at the bottom of the approval page.
TITLE OF DISSERTATION
IN CAPITALS

by

YOUR NAME IN CAPITALS

B.S., State University of New York at Buffalo
M.S., University of Chicago

A dissertation submitted to the Department of Biological Sciences
of Florida Institute of Technology in partial fulfillment
of the requirements for the degree of

DOCTOR OF PHILOSOPHY
in
BIOLOGICAL SCIENCES

Melbourne, Florida
May 2001

Figure 1. Title page.
TITLE OF THESIS
IN CAPITALS

A THESIS

by

YOUR NAME IN CAPITALS

Approved as to style and content by:

______________________________
Alan C. Leonard, Ph.D., Chairperson
Professor
Department of Biological Sciences

______________________________
Charles E. Helmstetter, Ph.D., Member
Professor
Department of Biological Sciences

______________________________
Bill J. Baker, Ph.D., Member
Professor
Chemistry Department

______________________________
Gary N. Wells, Ph.D.
Professor and Head
Department of Biological Sciences

May 2000

Figure 2. Thesis committee approval page.
Abstract. Your thesis must contain an abstract placed immediately after the approval page. Six hundred words is the maximum length of the abstract, but nearly all abstracts are shorter than this.

The abstract should contain the following:
- A clear statement of the problem you researched and its significance
- A brief description of the method of investigation
- An explanation of data analysis
- A statement of conclusions and how they relate to the original research problem

A heading following the style of the example in Fig. 3 must appear on the abstract of your thesis. (The example shown is for a doctoral degree in order that it may illustrate the style and spacing for the listing of previous degrees.) Particular points to note are:
- Numbering of pages starts with the abstract page ('iii')
- The word ABSTRACT is centered at the top of the page within the margins and is typed in capital letters
- The title of the thesis is typed in capital letters (and single spaced if more than one line in length) a triple space below the word ABSTRACT
- Your full legal name and your previous degrees are listed a double space beneath the last line designating the title
- Your chairperson is listed a double space below the line designating your previous degrees. NOTE: When there are co-chairpersons on your advisory committee, both are listed on the abstract page
EXAMPLE:
Co-chairpersons of Advisory Committee: Amy L. Wilson, Ph.D.
Walt T. Smith, Ph.D.
- The text of the abstract starts a triple space beneath the heading with a 5 space (0.5 in) indentation. The abstract text is typed double-spaced and is consistent with the spacing style followed in the text.

Dedication. A dedication (to parents, spouse, etc.) is optional. If included, it should appear before the acknowledgments on a separate page, untitled, single-spaced, with the page number shown as a Roman numeral centered on a line 1.0 in from the bottom.

Acknowledgments. It is important and appropriate that you always acknowledge those people and organizations that provided significant contributions to your research and thesis. Also, be sure to acknowledge any financial support that you received for your project. The acknowledgment page should be a separate page with "ACKNOWLEDGMENTS" centered at the top of the page with the page number shown as a Roman numeral centered on a line 1.0 in from the bottom.
ABSTRACT

A STUDY OF THE PHILOSOPHY OF RESEARCH FROM THE NINETEENTH CENTURY TO THE PRESENT TIME

by Donald Jay Lee, B.A., Central College; M.S., Glenn State University

Chairperson of Advisory Committee: Joseph S. Guy, Ph.D.

The text of the Abstract starts on this line with a 1/2 inch (5 spaces) indentation.
Table of Contents. The table of contents indicates the major divisions and principal (or second-order) subheadings of the manuscript. It should provide an analytical presentation of the materials in the study and page numbers on which the sections start. Preliminary page listings in the table of contents start with the abstract (iii) and must include all preliminary pages (inclusion of the table of contents page itself is optional).

All divisions of the text (i.e., chapters or sections) and subheadings within each chapter or section must be listed in the Table of Contents. The appropriate spacing, indentions, and capitalization should show the subordination of the subheadings. The table of contents at the beginning of this guide can serve as an example.

All supplementary pages (literature cited and appendices, if any) must be listed in the table of contents. The numbering, wording, and pagination of titles and headings must be exactly the same in the table of contents as they are on the pages of the manuscript.

Text. An example of page and text formatting is shown in Fig. 4. The text may be divided into chapters or sections. Chapters are used only when the thesis or dissertation topic consists of two or more distinctly separate subjects that cannot be combined. Each chapter is complete; i.e., each chapter has its own section headings. The literature cited sections, however, may be combined.

Chapters are designated by uppercase Roman numerals used consecutively throughout the narrative. Each chapter begins on a new page. The chapter designation (e.g., CHAPTER I) in capitals should be centered within the margins at the top of the page. The chapter title also is in capitals and is centered a double space below the chapter designation. All chapter titles of more than one line in length should be single-spaced. The section heading INTRODUCTION is centered on the margins, 3 spaces below the chapter title and the text begins 3 spaces below the section heading. In addition to an introduction, each chapter may include methods and materials, results, and discussion sections, each beginning on a new page. After all the chapters have been presented, a CONCLUSIONS section should begin on a new page with the heading centered and in capitals. Following conclusions, the LITERATURE CITED section should begin on a new page with the heading centered and in capitals. Each chapter or each section begins on a new page. Subdivisions within these sections or chapters do not begin on a new page. Use a system of subdivisions within the sections or chapters as in the example in Fig. 4.

If the chapter format is selected for the thesis or dissertation, it is suggested that the Department Head be consulted early in the planning for this format.
SECTION HEADINGS
ARE IN ALL CAPITAL LETTERS, AND CENTERED

Theses are generally organized into sections with each section covering a portion of
the thesis topic. Examples may be the headings of the preliminary pages (e.g.
ABSTRACT, ACKNOWLEDGMENTS, TABLE OF CONTENTS, LIST OF FIGURES,
LIST OF TABLES) or, as in the main body of the thesis, the INTRODUCTION,
MATERIALS AND METHODS, RESULTS, DISCUSSION, CONCLUSIONS, and
LITERATURE CITED. If the section heading is more than one line, the lines can be of
different length and single spaced.

Theses may also be organized into chapters if the topic is sufficiently diverse to
warrant it. If this organization is used, the chapter number heading is capitalized and
placed as shown above with the section heading 2 spaces below the chapter number
heading. Chapters are numbered in roman numerals. Each chapter will have its own
introduction, materials and methods, results, discussion, and conclusions sections. A
common literature cited section however should be used.

The main body of the thesis is double spaced, and begins three spaces below the
section heading.
SECOND-ORDER HEADINGS

Second-order headings are typed in capital letters, flush with the left margin, and on
a separate line. The text begins 2 spaces below second-order headings

THIRD-ORDER HEADINGS. This heading is typed in capital letters, underlined,
indented, and in line with the text.

Fourth-Order Headings. This heading is typed in capital and lower-case letters,
underlined, indented, and in line with the text.

Figure 4. Text page illustrating section headings.
Tables and Figures. Tables and figures must be able to stand alone without benefit of the text. The titles, legends, and symbols must be sufficiently complete so that a reader can understand and interpret the data without the need to refer to the text for explanation. No part of a table or figure can encroach into a margin, including captions, labels, etc. Tables and figures should be placed as close as possible after the first reference made to them in the text. For a short table or small figure, this may be on the text page itself, in which case it should be separated from the text by triple spacing at the top and bottom. A full-page table or figure should be placed on the page following the first reference to it. Subsequent references in later sections to a given table or figure should include the page number in parentheses—e.g. "... as in Fig. 3 (p. 3)."

Each table or figure in the main body of the thesis must have a number and a title. Titles should appear at the top of tables (Table 1) and at the bottom of figures (Fig. 5) leaving 2 spaces between the illustration and the title. Titles should be preceded by the word "Table", or "Figure", followed by an Arabic number and a period. The first word of the title is capitalized, and the title ends with a period. Titles of more than one line are typed single-spaced with a hanging indent, the second and subsequent lines aligned with the first letter of the title. The numbering should be consecutive from the beginning through to the end of the thesis. In this regard, you have two basic choices of format: (1) number the tables or figures consecutively (i.e., Table 1, Table 2, Table 3, etc.) throughout the entire document (except for the appendix); or (2) use a dual number system in which tables are numbered consecutively within each chapter and in which each number is preceded by the chapter number (i.e., Table I.1, Table I.2, Table I.3, etc. in Chapter I, and then Table II.1, Table II.2, Table II.3, etc. for Chapter II). Any references to figures or tables from previous chapters should include both the complete designation and page number (e.g., Table II.2, p. 47). When there are tables and figures in the appendix, they should be numbered Table A-1, Table A-2, etc. in Appendix A and Table B-1, Table B-2, etc. in Appendix B. When tables or figures in the Appendix are referenced in the text, the page number, in parenthesis, must accompany the reference—e.g., “...as in Table B-2 (p. 276).”

All titles and page numbers must be in the same typeface as the body of the text and be full-size regardless of any reduction made of the original illustration image.

Titles should be as concise as possible, but they should clearly describe the content of the table or figure. If two or more titles would otherwise be identically worded, then you must incorporate some differentiating word or phrase into each.

If tables (or illustrations) must be placed sideways on the page (landscape orientation), then the top of the table (or illustration) should be at the binding side of the paper. Tables too long or too wide for a single page, landscape or portrait, may be continued on the following right-hand pages(s). The table title should not be repeated. The heading should read “Table 4. Continued” and column and row headings must be repeated for continued tables.

Tables too long to conform to minimum margins may be typed in a smaller font. The page number, table number, and title should be in the same font size as the text of the document.
Table 1. Caloric density for major prey types of *Dasyatis sabina*. Data expressed as mean ± standard error. Number of species analyzed per taxon or ophiuroid disks from April, August, and December samples indicated in parentheses. The number of subsamples per species was 10. Ash free dry weight (AFDW).

<table>
<thead>
<tr>
<th>Taxon</th>
<th>Caloric Density (cal/mg AFDW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amphipods</td>
<td>5.03 ± 0.31</td>
</tr>
<tr>
<td>Isopods</td>
<td>4.78 ± 0.07</td>
</tr>
<tr>
<td>Ophiuroid Disks (3)</td>
<td>5.31 ± 0.42</td>
</tr>
<tr>
<td>Mysids (1)</td>
<td>5.98</td>
</tr>
<tr>
<td>Polychaetes (5)</td>
<td>5.72 ± 0.46</td>
</tr>
<tr>
<td>Bivalve Bodies (2)</td>
<td>5.59 ± 0.17</td>
</tr>
<tr>
<td>Species (17)</td>
<td>5.40 ± 0.41</td>
</tr>
</tbody>
</table>

From Bradley (1996)

Figure 5. Percentage of stingrays engaged in the three activities: feeding, swimming, and resting within the three subhabitats: sand, seagrass, and interface. Data expressed as percent total stingrays observed (dark bars) and percent total stingrays expected (hatched bars). From Bradley (1996).
List of Tables and List of Figures. The titles of all tables and figures must be single spaced and transcribed exactly (with their numbers) and in order on the list of tables and list of figures, respectively. When a title is exceptionally long, you may transcribe the first 2 lines in the list of tables or figures providing that the 2 lines clearly indicate the content of the table or figure and adequately differentiate between that title and those of other tables or figures. Do not include the figure or table legend in the list of tables or figures. Double space between each table and figure listed.

A list of figures or list of tables page is not necessary when the paper contains only 1 table or figure.

Preparation of Figures. Care and some forethought should be given to preparing the illustrations for your thesis. All graphs, charts, and maps should be printed on a high quality laser or ink jet printer. Color may be used if interpretation of the illustration is enhanced by its use. Otherwise, print all illustrations in black ink with appropriate legends to identify or label component parts. To make your figures as effective as possible, try to refrain from packing too much information into one graph. Usually only about nine symbols for different curves can be distinguished (Xs and open and closed circles, squares, triangles, and inverted triangles) on one graph.

If a figure is too large to fit within the margins, it may be photographically reduced. Be wary of using a copier to make successive reductions of a draft graph from which to draw a final figure. Each time a graph is copied, it becomes progressively distorted until the axes are at anything but a 90° angle!

Mounting Figures in the Manuscript. Care must be taken when mounting photographs for inclusion in the manuscript to ensure that they are securely and permanently fastened. Do not use rubber cement or glue sticks. Positional mounting adhesive (Scotch Brand 568 or Scotch 3M Spray Mount Adhesive) is best for this purpose and should be applied to the edges and corners of the photographs to ensure that they are firmly glued to the paper. Be careful: excess adhesive may bleed through the paper and cause pages to stick together. A hot mount method employing a warm iron and dry mount tissue sold by Kodak may also be used, but care must be taken not to damage the photograph with heat from the iron. All materials must observe the margins restrictions.

Photographs printed on glossy printer paper (8½ x 11), designed for that use, may be included in the text. For quality reproduction of half tones, fast drying HP Premium Photo paper such as HP LaserJet Paper HPJ1124 24 lb, 96 brightness is recommended.

Oversized materials, such as large maps or charts that cannot be reduced in size and yet must be included in the thesis must be folded to measure no more than 7½ x 10 inches. 

NOTE: Folding of materials to be bound with the pages of a narrative or separate inserts in pockets on the pages is discouraged. Many such items can be reduced and photographically reproduced. In the binding process, inserts are easily misplaced, and folded edges must be very narrow to prevent their being cut in the trimming at the bindery. Reduced tables, charts, and figures must be large enough to read easily.
Ideally, figure legends should be single spaced on the same page as the figures; however, a "facing page" may be necessary. Only a page number appears on the front side of the sheet. The legend is to be typed on the backside of the page, observing the proper margins (binding side of page 1.5 in) and orientation. Legend orientation must agree with the orientation (portrait or landscape) of the figure. The page on which the figure appears is numbered consecutively, with the page number placed in its usual position. On the List of Figures page, the number of the page on which the figure appears is the page number that is to be recorded opposite the figure number and title.

Do not use the "facing page" legend style unless it is absolutely necessary to do so. It is an accommodation only for those situations in which the legend cannot be typed directly onto the page on which the picture or drawing appears or when there is no room on the figure page for the legend to be typed within the margins. These are the only instances when typing is permitted on the backside of a page in a thesis.

Citing References in the Text. No reference should be included in the thesis unless it can be verified against the original document. Practices for citing references in the text vary widely from journal to journal. The system adopted by this manual is the Name and Year system (N-Y) sometimes known as the Harvard System. This system requires you to cite the name(s) of the author(s) and the year of the publication in the text. The placement of the parentheses depends on the sentence structure.

One Author:  Clark (1992) or (Clark 1992)

Two Authors: Clark and Jensen (1982), (1984) or (Clark and Jensen 1982, 1984)

Three or more Authors: Clark et al. (1990) or (Clark et al. 1990)

If the author(s) and the year are identical for more than one reference, insert lowercase letters in alphabetical succession after the year.

Clark (1992a) or (Clark 1992a)

Clark (1992b) or (Clark 1992b)

If two or more citations are used to document a single observation, separate them by a comma.

(Clark and Jensen 1982, Clark et al. 1990)

Taxonomic authorship is not a citation of literature. In such cases, follow the rules for punctuation in botanical and zoological nomenclature. For example, in the sentence, The apple snail *Ampullaria pinei* Dall, 1898 was originally described from the Homosassa River, but *Pomacea paludosa* Say, 1829 was described from the St. Johns River. Neither Dall nor Say is included in the literature cited section.

Literature Cited. The system of referencing the sources of information used in the thesis must follow the N-Y (name, year) style shown in the CBE Style Manual. Bibliographical entries should include only those sources of materials cited directly in the text of the thesis. The references should appear in a list at the end of the document entitled LITERATURE CITED. References to articles accepted for publication but not yet published and to unpublished documents held in a library or archival collection accessible to the public may also be listed in this section. Other unpublished material or personal communications not accessible to the scientific public are identified in statements within the text.
Information for a bibliographic reference should be taken from the original of the work being cited. Examples listed below for standard journal articles, books and monographs, technical reports, conference proceedings and theses and dissertation, should be followed. Please refer to the CBE Style Manual for other examples not given.

Standard Journal Article:


Chapter in a Book:


Textbook:


Journals and books published before 1920 often printed plates and figures at the end of the volume rather than include them within the article. It is appropriate then to include the figures and plate numbers that go with the article or chapter cited immediately following the page number(s).


Conference Proceedings:

Technical Report:


Dissertation or Thesis:


Abstract:


(Please note that the 4 space-hanging indent is the ONLY exception to the style given in the CBE style manual. Follow all other formatting rules as it applies to the literature cited.)

In the list of literature cited, the entries are arranged alphabetically by author and then chronologically when authors of two or more entries are the same.

If you wish to list general references consulted and used as background study, then these may be listed as a subdivision to the literature cited section. Some subheading title such as "Supplemental Sources Consulted" should be added at the conclusion of the sources cited directly, and the background materials may be listed alphabetically by author and should include the pertinent information for proper documentation.

Appendix. An appendix is optional and should be included only after consultation with your thesis advisor and careful consideration of its contribution to the thesis. Figures and tables discussed in the text cannot be placed in the appendices. Materials are included in an appendix that enhance or clarify the narrative text of the thesis. This may include, but is not limited to, technical notes, maps, photographs, computer printouts, complex charts or graphs, and long and detailed methods or survey forms. Use a separate appendix for each different type of material.

A small collection of material can be grouped together and simply titled "APPENDIX." If the amount of material is extensive, it should be classified into categories with each grouping constituting a separate appendix. When more than one appendix is used, each must be designated
by a letter (Appendix A, Appendix B, etc.), as well as by a title. Each appendix should begin with a title page in the same format as the first page of a chapter or main section. When no explanatory text is required, the page will contain only the appendix designation (e.g., APPENDIX B) centered between the margins and the title, centered and begun three spaces below the appendix designation. If the title is more than one line, it is single-spaced. The sequence of page numbers in the main text is continued in the appendices.

Tables and figures in appendices are numbered consistent with the appendix designation (Figure A-1, Figure A-2 for figures in appendix A; Table B-1, Table B-2 for tables in appendix B.)

EDITING YOUR MANUSCRIPT. At the risk of overstating the obvious, if you are at all unsure of the spelling of a word, USE A DICTIONARY or a spelling checker on a computer/word processor. Also, be careful to use words correctly. An excellent source book in this regard is:


In editing your manuscript, you should check especially that your spelling is consistent (standard American) in all words that have alternative spellings; in geographical, trade, and people's names; in abbreviations; and in units. The same holds true with regard to spacing.

In proofreading your thesis, many mistakes may be caught if, after reading it front to back, you read your thesis from back to front. Too often the tendency is to read what should be there rather than what is there.

References. References require careful, albeit tedious, checking. Some aspects to check in particular are:

- The dates should agree with those given in the text.
- The spelling and order of names (when there is more than one author) should agree with those cited in the text.
- When more than one reference is cited, the order of citations should be done consistently.
- The references in the Literature Cited section should be in a consistent alphabetical style.
- The reference must include the full title and beginning and ending pages.
- Check that all references are both cited in the text and are represented in the Literature Cited section.

Figures. Figures also should be standardized. Some aspects to check in particular are:

- Similar figures should be set up in the same format, especially with regard to axis labels, capitalization, and symbols.
- Maps must have latitude and longitude indications or, if the area under consideration is small (less than a few square kilometers), they should have a north arrow and a scale.
- All symbols should be defined.
- Any accessory scales should be clear as to what they mean.
Table of Contents, Figure Legends, and Tables. Again, consistency is of key importance. Some aspects to check in particular are:

- All headings, table titles, and figure legends should correspond exactly to those indicated in the Table of Contents, List of Figures, and List of Tables (exceptions: if symbols are defined or if a scale is given in a figure legend, they need not be included in the List of Figures).
- A table or figure number cited in the text should correspond to the correct table or figure.
- All tables should have the same format as far as capitalization, both in the table titles and table bodies.
- All footnotes in tables and references in both tables and figures should be formatted consistently. For example, if one table references T. Doe as "Doe (1984)", then all tables use the same format, as opposed to "Doe, 1984" or "Source: Doe (1984)".

Acronyms and Abbreviations. All acronyms and abbreviations (except for standard units) should be defined the first time that they are used in the Abstract and then again the first time that they are used in the text.

Units. Units should be displayed in a consistent manner (only one system is used, e.g., mg/l and mm/h or mg l\(^{-1}\) and mm h\(^{-1}\), not mg/l and mm h\(^{-1}\)). If metric units are used, then all measurements should be metric, unless special custom dictates otherwise. This applies to all parts of the thesis--text, tables, and figures.

Statistics. Consideration of accuracy and precision in measured or calculated values is most important. Without such information, your results will have limited application. Be sure that you use the appropriate number of significant figures consistently. Likewise, you should always include the number of replicates, means, and standard deviations, if applicable.

The use of advanced statistics has enabled scientists to uncover a wide range of correlations and to test for significance. Each statistical test cited in your thesis should be fully referenced and conform to standard nomenclature and procedure.

There are many textbooks and reference books available providing discussions of error and uncertainty in the measurement of properties. An excellent source is *Biometry* by Sokal and Rohlf.

Numbers in Text. (From CBE Style Manual, 6th ed.) When a number designates anything that can be counted or measured, Arabic numerals should be used instead of words:

| 3 toads | 5 enzymes | 52 proteins | 573 clams |

Ordinal numbers are treated in the same manner:

| 2\(^{nd}\) | 5\(^{th}\) | 47\(^{th}\) | 643\(^{rd}\) |

If a number begins a sentence, the number should be spelled out or the sentence needs to be reworded:

"Twenty milligrams is the desired amount, but 15 mg is enough."

"The desired amount is 20 mg, but 15 mg is enough."
For numbers consisting of 2 to 4 digits, the numerals are run together:

12 234 2000 3456

For numbers with more than 4 digits, mark off groups of 3 digits, starting at the decimal point with commas. Exceptions are US postal codes, patent numbers, and telephone numbers:

1,234,567 23,456.78

For numbers smaller than 1.0, an initial 0 should always be used before the decimal point:

0.123 0.05

SUGGESTED STYLE MANUALS. No one should assume that this handbook answers the many questions of style arising during the course of preparing a thesis or dissertation. Excellent manuals are available for this purpose. Two manuals are recommended for use in addition to this handbook:


When inconsistencies arise between the manuals that are not resolved by this handbook, the final authority is the Department Head. See the Department Head for any questions you may have.

SPECIFIC ITEMS CHECKED BY THE ADVISORY COMMITTEE

In addition to technical content and quality, the advisory committee will check:

- General neatness, including quality and method of duplication.
- Consistency of style and form.
- Title page, approval page, and abstract page, including:

  Style, spacing, and form (follow examples given in this guide).

  Correct month (May or December) and year of graduation on all pages that require this information (title page, approval page, abstract page).

  Your full legal name without designation of profession, military rank, or marriage on title, approval, and abstract pages.

- Exact correspondence of titles and page number of items in the table of contents, list of tables, and list of figures with the same titles and page numbers in the text.

- Style and spacing of major divisions and subheadings within the text, including:

  An examination of each major division. Each major division is typed in capital letters and starts on a new page. Examples of major divisions are the Abstract,
Acknowledgments, Table of Contents, List of Tables, List of Figures, Literature Cited, and each chapter (or section, if used in place of chapter divisions).

Consistent subordination of subheadings within each chapter or section. Subheadings are the divisions within each chapter or section, do not start on new pages, and are not typed solely in capital letters.

Indication of major divisions and principal (or first-order) subheadings on the table of contents page.

• Style and placement of figures and tables within paper.
• Reference system.
• Correct margins.
• Numbering of every page in paper starting with abstract page (‘iii’).

The Department Head will check your thesis very carefully for all of the above items to see that your thesis meets a uniformly high standard of presentation. The Department Head will address not only the scientific content (which is presumed to have been handled by the committee) but also the physical appearance, editorial details, and consistent format and style.

MAKING CHANGES IN YOUR MANUSCRIPT

When your manuscript has been checked for format and style, the Department Head will notify you about changes to be made. Although changes and corrections may be made on the original manuscript (with Liquid Paper or by other similar methods), it is preferable to reprint the corrected page. The corrected pages are then reproduced and substituted for unacceptable pages. You should make all necessary corrections promptly to expedite the final approval for the degree sought.

No interlineations, crossing out of letters or words, corrections made by the use of Liquid Paper, or extensive erasures are permitted on final copies (copies submitted to the Library).

The final typescript must be accurate, consistent in style, acceptable in form, and neat in appearance.

DEADLINES

At least 8 wks prior to anticipated graduation, you should present your thesis/dissertation to your advisor for review. The thesis must be successfully defended by the date specified by the Office of Graduate Programs and the completed, signed Examination Report submitted to the Office of Graduate Programs by this time. You must turn the copies of your thesis into the Graduate Office no later than the published deadline (Please contact the Graduate Programs Office). All other university or department-wide deadlines are listed in the Graduate Catalog. In addition, you should coordinate closely with your advisor on deadlines that they may require.
COPYING AND BINDING

The current Thesis/Dissertation Binding Instructions describe the details, costs and deadlines. These are sent to graduate students registered for thesis or dissertation. Students can obtain additional copies at the Graduate Programs Office, Crawford Building. In addition to the copies of your thesis, several other forms must be turned into the Graduate Programs Office. You must bring along your copy of the completed Petition For Graduation form (Appendix p. 87), showing that the binding fee has been paid, or a separate receipt for the paid binding charges (especially if you wish to have more than 5 copies bound).

If you are a Ph.D. candidate, you must also attach a filled-out Survey of Earned Doctorate form (available at the Graduate Programs Office) and, in a separate envelope, a copy of your abstract with a filled-out Dissertation Microfilming Agreement form (also available at the Graduate Programs Office). If you wish to copyright your abstract, you must also enclose the necessary fee in the form of a certified check. Plan to spend at least 15 min in the Graduate Programs Office while all of the paperwork is being completed. You will receive a receipt from the Graduate Programs Office vouching that you have turned in an acceptable thesis because this will be your only proof that you did indeed turn in your thesis, keep it until you receive your bound copy.

When submitting your thesis or dissertation to the Office of the Graduate School, all students must bring the following:

- At least 5 copies of the complete thesis, each in a separate envelope (do not seal or close clasp) labeled with your name, student number, academic department, and a local phone number. Underline your surname and write it in all capital letters as shown below:
  SMITH, John Edward
  123-45-6789
  Department of Biological Sciences
  723-1234
- Verification that the binding fee was paid. (first Petition for Graduation, cashier's receipt, canceled check, etc.)

Ph.D. students also bring:

- One additional properly labeled envelope containing a copy of the title page and abstract
- Receipt that the microfilming fee was paid
- Completed Dissertation Microfilming Agreement form
- Completed Survey of Earned Doctorate form

MICROFILMING

If you are a Ph.D. candidate, you must submit your dissertation and an abstract to University Microfilms, Ann Arbor, Michigan, for publication in Dissertation Abstracts International as a requirement for graduation. You must make all of the arrangements and pay all of the costs (as described previously).
PUBLICATION OF MANUSCRIPTS

As a graduate student pursuing work leading to an advanced degree, you are encouraged to publish a part of your thesis in a scholarly journal before you finish your thesis. In addition, you must give an acknowledgment to Florida Institute of Technology. Reprints of these published materials or copies of manuscripts prepared for submission to a journal are not acceptable in that format as part of the final copies of your thesis.
APPENDIX

INTRODUCTION

This appendix includes copies of forms and miscellaneous information required for your use as a graduate student in Biological Sciences. The forms are included to familiarize you with their appearance and are roughly arranged in order of their use as you progress through the graduate program. The copies of the forms cannot be used in place of the actual forms. Most forms are available through the Biological Sciences departmental office.

FORMS

REGISTRATION FORM
CHANGE IN REGISTRATION/STATUS
GRADUATE STUDENT PROGRESS FORMS
  I. Preliminary Conference
  II. Formation of Thesis or Dissertation Committee
  III. Thesis/Dissertation Title and Proposal Approval
  IV. Admission to Candidacy
  V. Approval for Thesis/Dissertation Presentation and Final Exam
MASTER'S DEGREE PROGRAM PLAN
REQUEST FOR CHANGE IN GRADUATE PROGRAM PLAN
REQUEST TO STUDY AT ANOTHER INSTITUTION AND TRANSFER OF GRADUATE CREDITS
DOCTORAL PROGRAM CHECK LIST
DOCTORAL PROGRAM PLAN
APPLICATION TO TAKE DOCTORAL COMPREHENSIVE EXAMINATION
DOCTORAL COMPREHENSIVE EXAMINATION REPORT
DOCTORAL DISSERTATION PROPOSAL CONFERENCE REPORT AND/OR APPLICATION TO DOCTORAL CANDIDACY
PETITION FOR GRADUATION
NOTICE OF THESIS OR DISSERTATION DEFENSE AND ORAL EXAMINATION
MASTER'S EXAMINATION REPORT
DOCTORAL DISSERTATION ORAL EXAMINATION REPORT
GRADUATE STUDENT CHECKOUT FORM
REPORT OF THE GRADUATE ADVISORY COMMITTEE
**REGISTRATION FORM**

<table>
<thead>
<tr>
<th>Social Security No.</th>
<th>Student No.</th>
<th>Major Code</th>
<th>Date</th>
</tr>
</thead>
</table>

Name: Last ____________________ First ____________________ Middle ____________________

Permanent Address ____________________ (Street/ Apt. No.) ____________________ (City) ____________________ (State) ____________________ (ZIP) ____________________

Phone ____________________

Local Mailing Address ____________________ (Street/ Apt. No.) ____________________ (City) ____________________ (State) ____________________ (ZIP) ____________________

Phone ____________________

Florida Tech Box No. ____________________ Dormitory Phone Extension __________

<table>
<thead>
<tr>
<th>CRN</th>
<th>Prefix - Course No. - Section</th>
<th>Course Title</th>
<th>Days</th>
<th>Times</th>
<th>Cr. Hrs.</th>
</tr>
</thead>
<tbody>
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<td>8</td>
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</tr>
</tbody>
</table>

PLEASE CHECK Year ____________________ Semester: ☐ Fall ☐ Spring ☐ Summer A ☐ Summer B ☐ Summer C

TOTAL HOURS ____________________

REQUIRED SIGNATURES:

Student ____________________________________________ Faculty Advisor ____________________

DISTRIBUTION: Florida Institute of Technology - Office of the Registrar

Florida Institute of Technology - Office of the Registrar
150 West University Boulevard, Melbourne, FL 32901-6988, (407) 368-8000, ext. 8118

FOR REGISTRATION CENTER USE ONLY

Initals ____________________. Date ____________________
# Change in Registration/Status

**A. Student Information**

<table>
<thead>
<tr>
<th>Student ID No.</th>
<th>Major Code</th>
<th>Semester/Year</th>
<th>SEGS Site</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Name (Last/First/Middle Init.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Street/Apt. No.)</td>
</tr>
<tr>
<td>-------------------</td>
</tr>
</tbody>
</table>

(Circle "Yes" or "No" as appropriate.)

1. I receive veterans education benefits

   Yes

   No

   Veteran Coordinator/Date ________________________

2. I am an international student

   Yes

   No

   International Student Affairs/Date ________________________

3. I am a student athlete

   Yes

   No

   Athletic/Certification Representative/Date ________________________

4. This is my first registration at Florida Tech

   Yes

   No

**B. Submit completed form, with appropriate signatures, directly to the Registration Center/SEGS Site.**

Do not list individual course(s) if you're dropping all classes or withdrawing from the university (please check your plans to return or not). Select one option box (1, 2 or 3) below.

1. [ ] Drop me from all my classes

2. [ ] I do not plan to return

3. [ ] I plan to return ___________ semester

4. [ ] I am not currently registered—withdraw me from the university

5. [ ] Process course(s) listed below

<table>
<thead>
<tr>
<th>CRN</th>
<th>Prefix</th>
<th>Course No.</th>
<th>Section</th>
<th>Course Title</th>
<th>Credits</th>
<th>Audit</th>
<th>CEU</th>
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<td>DROP</td>
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</table>

*(ANY LINE LISTED ABOVE THAT IS CROSSED OUT MUST BE INITIALED BY ADVISOR.)*

My reason for requesting this change is ____________________________________________

<table>
<thead>
<tr>
<th>I have attended ________ week(s) of classes</th>
<th>Student Signature/Date</th>
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**C. Faculty Advisor Approval required**

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<tr>
<th>Faculty Advisor/SEGS Site Representative</th>
<th>Date</th>
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<tr>
<th>Comment(s)</th>
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</table>

**D. The campus deadlines for dropping and adding course(s) are printed in the university catalog and the schedule of classes. Any deviations to the policy are subject to dean's approval.**

**E. Office Use Only**

<table>
<thead>
<tr>
<th>Final Grades will be:</th>
<th>[ ] No Record</th>
<th>[ ] &quot;W&quot;</th>
<th>[ ] NA</th>
<th>Tuition Credit (%)</th>
<th>Administrative Fee</th>
<th>Drop/Add Fee</th>
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</thead>
<tbody>
<tr>
<td>Processed by:</td>
<td>Date</td>
<td>SGASTD:</td>
<td>[ ] WS</td>
<td>[ ] WR</td>
<td>SFAREGS: ESTS Code</td>
<td>RSTS</td>
</tr>
</tbody>
</table>

| Title IV Recipient? | [ ] Yes | [ ] No |
| Financial Aid Int./Date | Auxiliary Services/Housing Int./Date |

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**Florida Institute of Technology • Office of the Registrar**

150 West University Boulevard, Melbourne, FL 32901-6975 • (407) 674-8118

**DISTRIBUTION:**

White – Registrar

Yellow – Student Accounting

Gold – Department/SEGS

Pink – Student

8/24/2017
GRADUATE STUDENT PROGRESS FORM

I. Preliminary Conference

Note: See reverse side for instructions

Student Name: ________________________________ Date: ________________

ID No.: ________________________________ email: ________________________________

Field of Study: ________________________________

Degree Program: Master’s ________ or Ph.D. ________

Advisor: ________________________________

Course Deficiencies: ________________________________

Transfer Credits for Graduate Program:

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Title</th>
<th>Credit Hours</th>
<th>Grade</th>
<th>Equivalent Florida Tech Course</th>
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</table>

Course Recommendations for First Semester:

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Title</th>
<th>Credit hours</th>
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<tbody>
<tr>
<td>BIO 5990</td>
<td>Biological Sciences Seminar</td>
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</table>

Total Credit Hours ______

Advisor Signature ____________________ Date ________________

GPC Approval _________________________

GPC Committee Signature ____________________ Date ________________
INSTRUCTIONS TO THE STUDENT

The academic record and career goals of all incoming graduate students are reviewed at a preliminary conference with their advisor. Any course deficiencies or graduate transfer credits are established and the student is assisted in the selection of courses for the first semester. Use the courses listed on this form as a guide to complete the University’s class REGISTRATION FORM.

After registration submit this completed form to the Biology office for placement in your graduate folder.
GRADUATE STUDENT PROGRESS FORM

II. Formation of Thesis or Dissertation Committee

Note: See reverse side for instructions

Student Name: ___________________________ Date: ______________________

ID No.: ______________________ email: ____________________________

Field of Study: ____________________________

Degree Program: Master’s ______ or Ph.D. ______

Title of Thesis/Dissertation Research: __________________________________________

<table>
<thead>
<tr>
<th>Committee Members (type or print)</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advisor</td>
<td></td>
</tr>
<tr>
<td>Dept. Member</td>
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<td>Dept. Member</td>
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<tr>
<td>Outside Member</td>
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<tr>
<td>Additional Member</td>
<td></td>
</tr>
</tbody>
</table>

Student Signature ___________________ Date __________

GPC Approval _______________________

GPC Committee Signature ___________________ Date __________
INSTRUCTIONS TO THE STUDENT

This form records your research committee members. Discuss with your Advisor the best qualified individuals from the graduate faculty who can provide constructive input to your research project. Master’s students select a minimum of two members from the Department of Biological Sciences and one graduate faculty from another department. Doctoral students select three members from the Department of Biological sciences and one outside member.

The outside member is a full-time faculty member in an academic department at Florida Tech that is not Biological Sciences. The outside member cannot hold adjunct status and they cannot be affiliated in any official way with Biological Sciences. The role of the outside member is as follows: 1) to serve as a representative of the university to ensure that the rules of the university are followed, 2) to serve as an advocate for the student regarding committee proceedings, 3) to provide an additional level of research expertise and perspective from outside the area of Biological Sciences.

If desired, additional committee members are permitted to serve on a graduate committee based on their appropriate research expertise and willingness to assist the student. Additional members may be solicited from any academic or industrial institution as is deemed appropriate by the student in consultation with his/her advisor. Additional members are not permitted to vote, but are invited to attend all meetings concerning the student’s advancement, although their attendance is not required.

Obtain the signatures of all committee members on the appropriate lines. The student signs this form and submits it to the biology office for approval by the GPC committee.
GRADUATE STUDENT PROGRESS FORM

III. Thesis/Dissertation Title and Proposal Approval

Note: See reverse side for instructions

Student Name: ____________________________ Date: ________________
ID No.: ____________________________ email: ____________________________
Field of Study: ____________________________
Degree Program: Master’s _______ or _______ Ph.D. _______

Approval of Thesis/Dissertation Research Proposal:
Title: ____________________________

Committee Member Name (type or print) Signature

_________________________________________ ____________________________ Advisor

_________________________________________ ____________________________ Dept. Member

_________________________________________ ____________________________ Dept. Member

_________________________________________ ____________________________ Dept. Member

_________________________________________ ____________________________ Outside Member

_________________________________________ ____________________________ Additional Member

Member

GP C Approval ____________________________ GPC Committee Signature ____________________________ Date ____________________________

8/24/2017
INSTRUCTIONS TO THE STUDENT

This form records the title of your thesis/dissertation research proposal. It is completed and signed by all committee members immediately following your proposal defense meeting.

Submit this completed form as the Title Page of your proposal to the Biology office for approval by the GPC committee.
GRADUATE STUDENT PROGRESS FORM

IV. Admission to Candidacy

Note: See reverse side for instructions

Student Name: _______________________________ Date: ______________

ID No.: __________________ email: _____________________________

Field of Study: _______________________________

Degree Program: Master’s ______ or Ph.D. ______

1. Completed course deficiencies: ______________

2. Completed 9 hours of graduate courses in good standing (Master’s only): ______________

3. Approval (Master’s) or Completion (Ph.D.) of Program Plan: ______________

4. Completion of Comprehensive Exam (Ph.D. only): ______________

5. Approval of Thesis/Dissertation Proposal (Ph.D. only): ______________

Advisor Signature ______________ Date ______________

+++

GPC Approval ________________________ GPC Committee Signature ______________ Date ______________

8/24/2017
INSTRUCTIONS TO THE STUDENT

This form admits the graduate student to candidacy so you can formally begin the research portion of your thesis or dissertation. It should be completed by the end of the first year (Master’s) or by the end of your 5th semester (Ph.D.) of graduate study.

1. Any course deficiencies listed on your Preliminary Conference form must be completed. Give date of completion. If you had no course deficiencies at admission then write ‘NA’ on line in Part 1.

2. For all Master’s students you must have completed at least 9 hours of course work in good standing. Record the date when this requirement was met.

3. Early in your graduate tenure you completed the DEGREE PROGRAM PLAN form. Doctoral students are admitted to candidacy when all formal course work is completed. Master’s students are admitted when the program plan is approved. Give the date that you met this requirement.

4. All doctoral students must have successfully passed the Comprehensive Examination. Refer to your Graduate Student Handbook for details for preparation and administration of the exam. Record the date that you successfully completed the examination.

5. If you are a doctoral student, list the defense date of your proposal to your committee.

Submit the completed form to the Biology office for GPC approval.
# GRADUATE STUDENT PROGRESS FORM

V. Approval for Thesis/Dissertation Presentation and Final Exam  

Note: See reverse side for instructions  

Date:  

Student Name:  
email:  

I.D. No.:  
Degree Program: Masters  or  Ph.D.  

1. Approval of Thesis/Dissertation for Distribution to Committee Members: I have reviewed and edited the draft thesis/dissertation for content and style and approved distribution to the committee.  
   Thesis/Dissertation Title:  

   Advisor Signature  
   Date  

2. Submittal of Thesis/Dissertation to the Committee: All committee members must receive a complete draft of the thesis/dissertation a minimum of 4 weeks before the anticipated defense date.  

<table>
<thead>
<tr>
<th>Committee Members (type or print)</th>
<th>Signature</th>
<th>Date Received</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td>Advisor</td>
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<td>Outside Member</td>
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<td>Additional Member</td>
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</table>

3. Approval for Thesis/Dissertation Presentation and Final Exam: Each committee member must approve that your thesis or dissertation is ready for presentation and you are ready for your final exam. You may schedule your presentation and final exam no sooner than 14 days following the last approval date below.  

<table>
<thead>
<tr>
<th>Committee Members (type or print)</th>
<th>Signature</th>
<th>Date Received</th>
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<tbody>
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<td>Additional Member</td>
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4. Scheduling of Thesis or Dissertation Presentation and Final Exam: Present this form to the department secretary who will schedule your presentation and final exam date and assist you in submission of the Graduate Program’s ‘yellow’ form “NOTICE OF THESIS OR DISSERTATION DEFENSE AND ORAL EXAMINATION.”  

   Presentation Date:  
   Final Exam Date:  
   by  

   GPC Approval  
   GPC Committee Signature  
   Date  

8/24/2017
INSTRUCTIONS TO THE STUDENT

This form documents preparation of your thesis/dissertation, promotes interaction with your advisor and committee members, and insures adequate lead time for the formal presentation of your research and final exam. **BE SURE TO READ AND CAREFULLY FOLLOW THESE INSTRUCTIONS OR YOU RISK DELAYING YOUR GRADUATION.** This form must be completed in its entirety a minimum of 2 weeks before the date of your thesis/dissertation presentation. There will be no exceptions to any of the time rules below unless by a special meeting and approval of all GPC Committee members. The student must also submit to the Graduate Programs Office the University form “NOTIFICATION OF THESIS OR DISSERTATION DEFENSE AND ORAL EXAMINATION” a minimum of 14 days before the defense date (see instructions for Part 4 below).

**Part 1.**

Before your thesis or dissertation is sent to your committee members and your presentation approved, you must have completed all research and produced a well-written and near-final draft. Your advisor will read your preliminary drafts and work with you to produce a near-final document. Your advisor must then approve distribution of the near-final draft to your committee members.

**Part 2.**

After your advisor approves distribution of your thesis/dissertation, deliver it to each committee member and have each sign AND CLEARLY DATE part 2 of this form. The earliest possible date for your defense is a minimum of 4 weeks following the last signature date. This waiting period is meant to provide enough lead time for the committee to read your thesis/dissertation and provide to you constructive input.

**Part 3.**

When your committee members have read your thesis/dissertation and are satisfied with its content, they approve scheduling of your presentation and final exam. Have each committee member sign AND CLEARLY DATE part 3 of this form. You may schedule your presentation and final exam no sooner than 14 days after the last signature date in Part 3. This waiting period is meant to provide enough time for the student to address any major corrections of the research and prepare for the defense.

**Part 4.**

Submit this completed form to the Biology office secretary who will schedule the dates for your presentation and final exam, and then send it to the GPC Committee for final approval. The doctoral dissertation defense must be scheduled either immediately following or within 2 working days of the dissertation seminar. The Master’s thesis defense must be scheduled within one week following the thesis seminar.

The University ‘yellow’ form entitled “NOTICE OF THESIS OR DISSERTATION DEFENSE AND ORAL EXAM” will be prepared by the Biology office staff for submission to the Graduate Programs office. The latter form must also be RECEIVED by the Graduate Programs office a minimum of 14 days prior to the examination date. **IT IS THE RESPONSIBILITY OF THE STUDENT TO ALLOW SUFFICIENT TIME FOR PROCESSING BY THE BIOLOGY OFFICE. IT IS STRONGLY RECOMMENDED THAT THE STUDENT SUBMIT FORM V AT LEAST 3-4 WEEKS BEFORE THE SCHEDULED DEFENSE DATE!**
<table>
<thead>
<tr>
<th>FLORIDA TECH COURSE NO.</th>
<th>FLORIDA TECH COURSE TITLE</th>
<th>QUARTER CREDITS</th>
<th>SEMESTER CREDITS</th>
<th>GRADE</th>
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Student Signature ___________________________ Date ____________

Faculty Advisor Signature ___________________________ Date ____________

DISTRIBUTION: Who – Register,
Yellow – Department, Pink – Student
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150 West University Boulevard, Melbourne, FL 32901-6988 • (407) 768-8000, ext. 8116

8/24/2017
REQUEST FOR CHANGE IN GRADUATE PROGRAM PLAN

DATE ____________________________

NAME (PLEASE PRINT) ____________________________ SOCIAL SECURITY NUMBER ____________________________

(First) (Last)

MAILING ADDRESS ____________________________ Street ( Apt. No.) ____________________________

City ____________________________ State ____________________________ ZIP Code ____________________________

DEPARTMENT ____________________________ DEGREE PROGRAM ____________________________

MAJOR CODE ____________________________ GRADUATION TERM ____________________________

<table>
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<tr>
<th>NEW COURSE NUMBER AND TITLE</th>
<th>QTR/SEM CREDITS FOR</th>
<th>OLD COURSE NUMBER AND TITLE</th>
<th>QTR/SEM CREDITS</th>
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REASON FOR REQUEST _____________________________________________________________

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Student Signature ____________________________ Date ____________________________

APPROVED

Faculty Advisor Signature ____________________________ Date ____________________________

Department Head Signature ____________________________ Date ____________________________

DISTRIBUTION: White – Registrar, Yellow – Department, Pink – Student

Florida Institute of Technology • Office of the Registrar

150 West University Boulevard, Melbourne, FL 32901-6988 • (407) 768-8000, ext. 8116
REQUEST TO STUDY AT ANOTHER INSTITUTION
AND TRANSFER OF GRADUATE CREDITS

Social Security Number ____________________________ Major Code ____________ Campus ______________________

Name __________________________________________

Address _________________________________________

Street ____________________________ City __________ State __________ ZIP __________

Credit is requested for the following graduate courses □ taken □ to be taken

At ____________________________________________ Term(s) ______________________

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>CREDITS</th>
<th>BASIS*</th>
<th>GRADE</th>
<th>TITLE AND BRIEF DESCRIPTION</th>
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</table>

*C = Quarter  S = Semester

I understand that I must earn/have earned a grade of B or better in each course for which I am requesting transfer credit and that I must have OFFICIAL transcripts sent to the Florida Tech Graduate School Office.

Student Signature ____________________________ Date ______________________

DO NOT WRITE BELOW THIS LINE

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>FLORIDA INSTITUTE OF TECHNOLOGY EQUIVALENT</th>
<th>TRANSFER</th>
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</thead>
<tbody>
<tr>
<td>(FROM ABOVE)</td>
<td>COURSE NUMBER</td>
<td>TITLE</td>
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<td>CREDITS GRANTED</td>
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</table>

TOTAL TRANSFER CREDIT GRANTED

APPROVED: Department Head ____________________________ Date ______________________

Dean of the Graduate School __________________________ Date ______________________

DISTRIBUTION: White – Registrar, Yellow – Department or Off-Campus Programs Office, Pink – Student

Florida Institute of Technology • Office of the Registrar
150 West University Boulevard, Melbourne, FL 32901-6988 • (407) 786-8000, ext. 7399

8/24/2017
# Doctoral Program Check List

<table>
<thead>
<tr>
<th>Date Completed</th>
<th>Requirement</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Entrance</td>
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<tr>
<td>2.</td>
<td>Preliminary Comprehensive (Bio, EE, ME, Bus, OE)</td>
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<tr>
<td>3.</td>
<td>Program of Study Submitted during 1st or 2nd term (Policy 2.2.1)</td>
</tr>
<tr>
<td>4.</td>
<td>Coursework Completed (Policy 2.2.2)</td>
</tr>
<tr>
<td>5.</td>
<td>Doctoral Cmtee established &amp; approved IN WRITING by Academic Unit Head, collegeg/school Dean &amp; Grad School Office no later than 60 days prior to Comprehensive Exam (Pol 2.3.1)</td>
</tr>
<tr>
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<td><strong>Name</strong></td>
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<td>Dept</td>
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<td><strong>Outside Mbr</strong></td>
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<tr>
<td>7.</td>
<td>Oral Comprehensive Examination Announcement (&quot;the yellow form&quot;) sent to the Office of the Graduate School (no later than 2 weeks in advance)</td>
</tr>
<tr>
<td>8.</td>
<td>Oral Comprehensive Exam (all majors).</td>
</tr>
<tr>
<td>9.</td>
<td>Language Exam (Bio, EvS, Chem, O) [Required by Academic Unit, not Grad School]</td>
</tr>
<tr>
<td>10.</td>
<td>Dissertation Proposal Conference (held after Comprehensive Exam [Policy 2.6.1])</td>
</tr>
<tr>
<td>11.</td>
<td>Admission to Candidacy (after Comprehensive Exam(s) &amp; Proposal Conference [Pol 2.5])</td>
</tr>
<tr>
<td>12.</td>
<td><strong>Dissertation Registration:</strong></td>
</tr>
<tr>
<td></td>
<td>Required from 1st semester after Admission to Candidacy (including summer) until Office of the Graduate School accepts minimum 5 copies of approved dissertation. (Policy 2.6.3)</td>
</tr>
<tr>
<td></td>
<td>Required every semester thereafter (including summer) until QSO accepts (Policy 2.6.2)</td>
</tr>
<tr>
<td></td>
<td>24 Credit Hours Dissertation toward the 78 hrs req'd (Pol 2.2.2)</td>
</tr>
<tr>
<td></td>
<td>Minimum of 15 hours after Admission to Candidacy (Pol 2.2.2)</td>
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<td><strong>Sem</strong></td>
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<td>Credits</td>
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<tr>
<td>13.</td>
<td>Bring first few pages of dissertation to Grad School Office to check format/layout</td>
</tr>
<tr>
<td>14.</td>
<td>Research satisfied (minimum 1 calendar year after Comprehensive Exam(s) [Policy 2.4.3])</td>
</tr>
<tr>
<td>15.</td>
<td>Petition to Graduate submitted (at least 21 weeks prior to graduation. Confirm deadline in &quot;Calendar of Events&quot; at front of current catalog.)</td>
</tr>
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<td>16.</td>
<td>Residency satisfied (2 year minimum registration at Florida Tech [Pol 2.7])</td>
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<td>17.</td>
<td>Dissertation to Committee for review at least 1 month prior to defense</td>
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<td>18.</td>
<td>Bring entire dissertation to Grad School Office to check layout and compliance with requirements</td>
</tr>
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<td>19.</td>
<td>Dissertation Seminar</td>
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<td>20.</td>
<td>Dissertation Defense Announcement (&quot;the yellow form&quot;) sent to the Office of the Graduate School (at least 2 weeks in advance)</td>
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<td>21.</td>
<td>Get Microfilm Agreement and Survey of Earned Doctorate forms from Grad School Office (essential)</td>
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<td>22.</td>
<td>Dissertation Defense</td>
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<td>23.</td>
<td>Payment of Binding fee (required 5 = $60, extras @ $10) and additional microfilming fee (if not earlier)</td>
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<td>24.</td>
<td>Submit to the Office of the Graduate School: Microfilm Agreement Fm + 1 extra title page and abstract (350 wd max or THEY will edit 1 copy)</td>
</tr>
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<td></td>
<td>Survey of Earned Doctorate Form</td>
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<td>at least 5 copies of Dissertation (deadline 9:00 a.m. of the day before graduation)</td>
</tr>
</tbody>
</table>

June 11, 1999

8/24/2017
FLORIDA INSTITUTE OF TECHNOLOGY
Doctoral Program Plan
(To Be Submitted in Triplicate)
(Please Print or Type)

Name: ___________________________ Student #: ________________
Address: _________________________ City: _______________________
Department: _____________________ Area of Specialization: ____________

ADVISORY COMMITTEE:

Chairman: _______________________
Member: _________________________
Member: _________________________
Member: _________________________

Language Requirement (indicate language): __________________________

(Include Transfer Credits — Indicate with ‘T’ in Grade Column)

<table>
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<th>Course Title</th>
<th>Cr.</th>
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</table>

**TOTAL NUMBER OF CREDITS:**

Signature: ___________________________________________ Date: __________

(student)

Signature: ___________________________________________ Date: __________

(faculty advisor)

Approved: _____________________________________ Date: __________

(department head)

Approved: _____________________________________ Date: __________
Application to Take Doctoral Comprehensive Examination
(Due to GPC during the first week of the semester of exam)

Student Name:__________________________________________ ID No:____________________

I intend to take the Doctoral Comprehensive Examination this semester. I am in my second year of doctoral studies.

___________________ (Student Signature) __________________ (Date)

Contact Information: e-mail:______________________________ Phone:____________________

Committee Members (type or print) Signature

______________________________ _________________________ Advisor

______________________________ _________________________ Dept. Member

______________________________ _________________________ Dept. Member

______________________________ _________________________ Dept. Member

______________________________ _________________________ Dept. Member

______________________________ _________________________ Outside Member

______________________________ _________________________ Additional Member

______________________________ _________________________ GPC Representative

+---------------------------------------------------------------------+

GPC Approval ________________________________ (GPC Committee Signature) _____________________ (Date)

8/24/2017
**EXAMINATION REPORT**

Current (not anticipated) OVERALL GPA from Banner: ____________________________

Current (not anticipated) PROGRAM GPA (Calculate if different, Banner does not show): ____________________________

(Graduate Policy 1.8.2 requires that MS students have BOTH Overall and Program GPA’s of 2.0 AT THE TIME the examination is administered.)

**Student Name: ____________________________ Student Number: ____________________________ Major Code: ____________________________
Degree Program: ____________________________ Academic Unit: ____________________________

[ ] Paper  [ ] Electronic

Title of Dissertation/Thesis/Design Project: ________________________________________________

Dissertation/Thesis/Design Project course number: ____________________________ Number of hours of P to be credited (per Program Plan): ____________________________

**COMMITTEE ADMINISTERING EXAMINATION AND/OR APPROVING DISSERTATION/THESIS/DESIGN PROJECT:**

<table>
<thead>
<tr>
<th>Major Advisor or Examiner of Language Exam</th>
<th>Academic Unit</th>
<th>Signature</th>
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<tbody>
<tr>
<td>Outsider Member</td>
<td>Academic Unit</td>
<td>Signature</td>
</tr>
<tr>
<td>Other Member</td>
<td>Academic Unit</td>
<td>Signature</td>
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<tr>
<td>Other Member</td>
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<td>Signature</td>
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<tr>
<td>Other Member</td>
<td>Academic Unit</td>
<td>Signature</td>
</tr>
</tbody>
</table>

Language of Language Exam: ____________________________ Other Member: ____________________________ Signature: ____________________________

Comments/Weak areas/Additional coursework: ________________________________________________

**APPROVED** Academic Unit Head: ____________________________ Date: ____________________________

**DOCUMENT ACCEPTED** Office of Graduate Programs: ____________________________ Date: ____________________________

**COMPLIES WITH POLICY** Director of Graduate Programs: ____________________________ Date: ____________________________

**DISTRIBUTION:**
- Blue – Registrar
- Yellow – Academic Unit
- Florida Institute of Technology • Office of Graduate Admissions
  150 West University Boulevard, Melbourne, FL 32901-6975 • (321) 674-8027

8/24/2017
DOCTORAL DISSERTATION PROPOSAL CONFERENCE REPORT
AND/OR APPLICATION TO DOCTORAL CANDIDACY

Student Name ___________________________________________ Student Number ___________________ Major Code ______

Street Address __________________________________________

City/State/ZIP ___________________________________________

Degree Program __________________________________________ Academic Unit __________________________

Dates: Preliminary Exam (or NA) ____________ Language Exam (or NA) ____________ Committee Approved ____________

Comprehensive Exam Passed ____________ Dissertation Topic Approved ____________

Approved Dissertation Topic __________________________________________

Major Advisor ___________________________________________ Academic Unit __________________________ Signature ______

Outside Member ___________________________________________ Academic Unit __________________________ Signature ______

Other Member ___________________________________________ Academic Unit __________________________ Signature ______

Other Member ___________________________________________ Academic Unit __________________________ Signature ______

Other Member ___________________________________________ Academic Unit __________________________ Signature ______

Comments ___________________________________________

3 Application to Doctoral Candidacy

In accordance with the current Florida Institute of Technology catalog, I have fulfilled all stated requirements, and do therefore petition for admission to Doctoral Candidacy. I understand that I must register for at least three hours of dissertation every consecutive semester (including summer) until the Office of Graduate Programs accepts my finished dissertation. A written waiver of the requirement for continuous registration may be submitted in advance of any term during that I will not be using Florida Tech facilities or faculty time. I also understand that I must register for a minimum of 15 dissertation hours during the time of my candidacy.

Student's Signature ___________________________________________ Date __________________________

4

APPROVED ___________________________________________ Date __________________________

MEETS REQUIREMENTS Director of Graduate Programs ___________________________________________ Date __________________________

Please fill out Sections 1, 2, 4 for Doctoral Dissertation Proposal Conference Report ONLY, or Sections 1, 3, 4 for Application to Candidacy ONLY

DISTRIBUTION (after all signatures have been affixed):
White – Registrar
Yellow – Academic Unit

Florida Institute of Technology • Office of Graduate Admissions
150 West University Boulevard, Melbourne, FL 32901-6795 • (321) 674-8027

8/24/2017
PETITION FOR GRADUATION

First Petition     Re-Petition     Social Security No.     Date
(circle one)          (circle one)

TYPE or PRINT Name Clearly

Mailing Address

Local Telephone ____________________________ Home Telephone ____________________________ Work Telephone ____________________________

I am petitioning for graduation at the end of ____________________________

I expect to complete the requirements for the (circle one) A.S. B.A. B.S. M.B.A. M.S. Ed.S. Ph.D. Psy.D.

degree in ____________________________ University Catalog __________________ applies.

(major/field) (major code) (year)

Student Signature ____________________________ Date ____________________________

In the event my diploma must be mailed, please use the following address:

Advice Signature ____________________________ Date ____________________________

Florida Tech offers certificates called "Pushing Honey Thy" to the spouses of our graduates. If you would like one, please print the name of

your spouse:

(check one) □ I will participate in the commencement exercises. □ May □ December

□ I will NOT participate in the commencement exercises.

CAP AND GOWN INFORMATION

CHECK ONE: □ M □ F Height ______ ft. ______ in.

Weight ______ lbs.

CIRCLE CAP SIZE

X-small           Small           Medium           Large           X-Large

6-1/4-6-3/8         6-1/2-6-3/4         6-7/8-7-1/4         7-3/8-7-5/8         7-3/4-8-1/8

INFORMATION PERTAINING TO GRADUATE STUDENTS ONLY

Previous Degree(s):

Undergraduate ____________________________ (name of degree and major)

(name of school, state/country where earned)

Graduate: ____________________________ (name of degree and major)

(name of school, state/country where earned)

PAYMENTS

1. Graduation Fee ____________________________ Paid-Date ____________________________ Receipt # ____________________________ Amount ____________________________

2. Matriculation Fee ____________________________ Paid-Date ____________________________ Receipt # ____________________________ Amount ____________________________

3. Thesis/Dissertation, Binding ____________________________ Paid-Date ____________________________ Receipt # ____________________________ Amount ____________________________

4. Dissertation, Microfiling ____________________________ Paid-Date ____________________________ Receipt # ____________________________ Amount ____________________________

5. Late Fee ____________________________ Paid-Date ____________________________ Receipt # ____________________________ Amount ____________________________

DISTRIBUTION (Registrar will distribute all copies): White – Registrar; Yellow – Department, Pink – Student

Florida Institute of Technology • Office of the Registrar

150 West University Boulevard, Melbourne, FL 32901-6713 • (407) 756-8000, ext. 8116

8/24/2017

RG-040-196
NOTICE OF THESIS OR DISSERTATION DEFENSE AND ORAL EXAMINATION

<table>
<thead>
<tr>
<th>TO: Office of the Graduate School, Keuper 101, x-8137</th>
<th>FROM: [Student Name] [Department/Program]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Submit NO LATER THAN 14 days before defense/exam</td>
<td>Approval Signature of Dept/Hld/Prog Chair (REQUIRED)</td>
</tr>
<tr>
<td>Student Name [Student Number]</td>
<td>Major [Code] GPA [ ]</td>
</tr>
<tr>
<td>Student Phone</td>
<td>1 Ph.D. Dissertation Defense 2 MS Thesis Defense</td>
</tr>
<tr>
<td>Student Phone</td>
<td>3 MS Oral Comp [ ]</td>
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<td>Student Email</td>
<td>4 Ph.D. Oral Comp [ ]</td>
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<td>Student Phone</td>
<td>5 Ed.S. Comp [ ]</td>
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<tr>
<td>Student Phone</td>
<td>(WRITTEN MS and Ph.D. Comprehensive Examinations are NOT announced)</td>
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<td>Title of Thesis/Dissertation (Please use initial capitalization so acronyms are easy to spot. Underline words to be italicized.)</td>
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Please schedule during normal business hours Date [ ] Time [ ] Place [ ]

Below, type/print committee member’s names, using correct title (Dr., Prof., Mr., Ms., etc.). Their signatures are not necessary.

<table>
<thead>
<tr>
<th>COMMITTEE MEMBERS: Major Advisor [ ] Dpt/Prog [ ]</th>
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<tr>
<td>(Full Time faculty) Outside Member [ ] Dpt/Prog [ ]</td>
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<td>Other Committee Members [ ] Dpt/Prog [ ]</td>
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8/24/2017
EXAMINATION REPORT

Current (not anticipated) OVERALL GPA from Banner

Current (not anticipated) PROGRAM GPA (Calculate if different. Banner does not show.)

(Graduate Policy 1.6.3 requires that MS students have BOTH Overall and Program GPA's of ≥ 3.0 AT THE TIME the examination is administered.)

Student Name ___________________________ Student Number ___________________________ Major Code ___________________________

Degree Program ___________________________ Academic Unit ___________________________

☐ Paper  ☐ Electronic

Title of Dissertation/Thesis/Design Project ___________________________

Dissertation/Thesis/Design Project course number ___________________________ Number of hours of P to be credited (per Program Plan) ___________________________

COMMITTEE ADMINISTERING EXAMINATION AND/OR APPROVING DISSERTATION/THESIS/DESIGN PROJECT

{ Major Advisor/Examiner of Language Exam  Academic Unit  Signature
  Outside Member  Academic Unit  Signature
  Other Member  Academic Unit  Signature
  Other Member  Academic Unit  Signature
  Other Member  Academic Unit  Signature

Language of Language Exam ___________________________

Comments/Weak areas/Additional coursework ___________________________

APPROVED  Academic Unit Head ___________________________ Date ___________________________

DOCUMENT ACCEPTED  Office of Graduate Programs ___________________________ Date ___________________________

COMPLIES WITH POLICY  Director of Graduate Programs ___________________________ Date ___________________________

DISTRIBUTION (after all signatures have been affixed):
White – Regular
Yellow – Academic Unit

Florida Institute of Technology • Office of Graduate Admissions
1500 West University Boulevard, Melbourne, FL 32901-6915 • (321) 674-6000

8/24/2017
**EXAMINATION REPORT**

Current (“not anticipated”) OVERALL GPA from Banner:  

Current (“not anticipated”) PROGRAM GPA (Calculate if different. Banner does not show.)  

(Graduate Policy 1.5.2 requires that MS students have BOTH Overall and Program GPA’s of ≥ 3.0 AT THE TIME the examination is administered.)

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Degree Program:  

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Paper  

Electronic  

Title of Dissertation/Thesis/Design Project:  

Dissertation/Thesis/Design Project course number:  

Number of hours of P to be credited (per Program Plan):  

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COMMITTEE

ADMINISTERING EXAMINATION AND/OR

APPROVING DISSERTATION/THESIS/DESIGN PROJECT:

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Language of Language Exam:  

Other Member  

Comments/Weak areas/Additional coursework:

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APPROVED:  

Academic Unit Head:  

Date:  

DOCUMENT ACCEPTED:  

Office of Graduate Programs:  

Date:  

COMPLIES WITH POLICY:  

Director of Graduate Programs:  

Date:  

DISTRIBUTION (after all signatures have been affixed)

White – Registrar

Yellow – Academic Unit

Florida Institute of Technology • Office of Graduate Admissions

130 West University Boulevard, Melbourne, FL 32901-6975 • (321) 674-8027

DA-177-305

8/24/2017
DEPARTMENT OF BIOLOGICAL SCIENCES
FLORIDA INSTITUTE OF TECHNOLOGY

Graduate Student Checkout Form

Date: ______________________

Name: ______________________  Student Number: ____________

Forwarding Address: ______________________

________________________

Graduation Date: ______________

All items must be returned and proper signature obtained.

Approval Signature

1. Research Notebooks. ______________________
   Faculty Advisor ______________________

2. All items checked out of stockroom. ______
   Alex Lindsay ______________________

3. All keys. __________________________
   Carolyn Sorrell ______________________

4. Class record books (Grad. Assistants). ______________________
   Carolyn Sorrell

Student Signature ______________________

8/24/2017
Report of the Graduate Advisory Committee Meeting  
Department of Biological Sciences, Florida Institute of Technology

Each student’s Graduate Advisory Committee must meet every six months. This report is to be completed, signed, and distributed within one week of the meeting to the Biological Sciences Office, the Chair of the Graduate Program, all committee members, and the student. A copy will be maintained in the student’s file.

Students complete and sign their section before giving it to the Faculty Advisor.

Name of student: _____________________  Name of Advisor: _____________________

Date of meeting: _____________________

Committee members in attendance: ____________________________________________

TO BE COMPLETED BY STUDENT  Student Signature _______________________________

1. Briefly review your research accomplishments since the last meeting.  
   Attach a report if one was submitted to the committee.

2. What specific recommendations were made by the Committee for future research?

3. What is the timetable for completion of your degree?
TO BE COMPLETED BY ADVISOR

Advisor Name: ________________________
Advisor Signature ________________________

1. In the opinion of the committee, should this student continue in the degree program? Yes □ No □

2. Evaluate the student's performance in research and intellectual development over the last six months.

3. In terms of development as an independent scientific investigator, evaluate the student's strengths and weaknesses at this point in their graduate program.

4. Are the student's oral and written communication skills acceptable? If improvement is needed, what suggestions should be made to the student.

5. Identify any extant weaknesses or deficiencies, and describe how they are to be corrected.

6. Are there any other mitigating factors that should be made apparent to the Department Head or the Dean's Office regarding student performance, interaction with the advisor and committee, or the student's potential for completing the degree?
### GRADUATE COURSE OFFERINGS THROUGH SPRING 2018

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### Note to Students

Unfortunately, this list is subject to change due to changes in faculty, sabbaticals, changes in enrollment, and the whims of the Universe. Please contact individual faculty if they are teaching a course that you are interested in taking to confirm they will be offering it the semester you would like to take it.