

## **A GUIDE TO ASSIST STUDENTS OBTAINING A DOCTORAL DEGREE IN INTEGRATIVE BIOLOGY**

### **FLORIDA ATLANTIC UNIVERSITY**

#### **I. THE FLORIDA ATLANTIC UNIVERSITY GRADUATE POLICIES AND PROCEDURES MANUAL**

Students should consult the Graduate Policies and Procedures for university-wide policies and procedures prescribed by the Graduate College of Florida Atlantic University (see <http://www.fau.edu/graduate/>).

The following are guidelines pertaining specifically to the Integrative Biology program. The privileges and responsibilities of the IB-PhD students are described below. Students are responsible for following the rules and regulation of the program. In addition, students are expected to be willing participants in the program; this includes attending mandatory meetings and participating in other activities of the program, such as the annual IB-PhD retreat. Failure to fulfill responsibilities, or to follow the policies and guidelines, may result in the loss of the teaching assistantship and subsequently the exclusion from the program.

The students are encouraged to elect and form the following positions and committees by annual democratic elections.

- 1.) Two Students leaders one from the molecular/medical/neuroscience and one from the ecological/environmental/marine science area. The student leaders are responsible for the annual elections of the committees & positions described below as well as have the right to form *ad hoc* committees as required. They shall oversee, guide and direct the duties of the committees on a regular basis and communicate with the program director or associate directors about the concerns of the students
- 2.) One IB PhD Program Committee Student Representative: The students will participate in all the meetings of the program committee and represent the student's opinion to the best of their knowledge.
- 3.) Recruitment and Alumna Committee. Shall be involved helping and working closely with the director and associate directors in the recruitment of new students, advertisement of the program, and in the maintenance of contact information of alumna students.
- 4.) Retreat and Social Committee. Shall be involved in and working closely with the director and associate directors in the organization of festivities and activities of the IB-PhD program, such as the annual IB-PhD retreat.

Teaching Assistantships (TA) are guaranteed for the first year to every IB-PhD student. IB-PhD students qualify for a TA or Research Assistantships (RA) in the following years on a competitive basis. TA positions are given with preference to students that are in the department where the TAs are allocated. Program Faculty with affiliate appointments are expected to have sufficient funding to sponsor students on RA positions after the first year. IB-PhD students with an affiliate member as an advisor may only be eligible for a TA position on a competitive basis when available or under special circumstances as approved by the program director.

## II. COURSE WORK REQUIREMENTS

Doctoral degrees at FAU require at least 80 semester credits beyond the baccalaureate degree (a Masters degree is considered equivalent to 30 semester credits). The following are requirements of the Program in Integrative Biology. A minimum of 18 credits of course work with a cumulative grade point average of 3.0 or higher with the following requirements.

### NOTE:

- Students must be registered for a minimum of nine credits per semester to be considered a full-time student and be eligible for graduate teaching and research assistantships and tuition waivers during the academic year. Registration for six credits is required to maintain full-time student status during the summer.
- **Students must maintain a minimum of 3.0 GPA to be eligible for graduate teaching assistantship.**
- **ALL students must register for ALL courses via the program assistant, Jennifer Govender, email: jgovende@fau.edu**

### REQUIRED CORE COURSES:

1.) INTEGRATIVE BIOLOGY (BSC6390) (3 Cr): This course presents the concepts inherent in an integrative view of biology. Integrative Biology I is offered only in the Fall semester and **must** be taken within the first year.

2.) ONE COURSE IN BIOSTATISTICS: A course in statistics appropriate to the area of specialization of the student. (Minimum 3 credits).

- Experimental Design and Biometry(BSC 6206) (3 Cr)
- Statistical Methods for Environmental Science (STA 6206) (3 Cr)
- Experimental Design 1 (PSY 6206) (3 Cr)

3.) SCIENTIFIC COMMUNICATION (ENC 6258) (3 Cr): Introduces students to the proposal writing and presentations for scientists. Should to be taken in the 4<sup>th</sup> semester in preparation for the Dissertation proposal.

### OTHER COURSE REQUIREMENTS FOR THE DOCTORAL DEGREE:

1.) Research Credits:

1a.) First and second semester: IB Lab Rotations (BSC 6905)

1b.) After First/second semester but **PRIOR** to Candidacy: Advanced Research in Integrative Biology (BSC 7978)

1c.) After attaining Candidacy: Dissertation Research Credits (BSC 7980) A minimum of 25 credits of doctoral dissertation research is required.

**DIS** credits are **not** acceptable to the Program

2.) Students are required to enroll in a minimum of **three 1 credit seminar/journal club courses** intended to be taken over the entire term of residence of the program. No more than one seminar/journal course per semester/summer counts towards this requirement. Students are expected to give at least one presentation in one of the seminar/journal club courses. The title of

the course **must** indicate that it is a seminar/journal club. The seminar/journal club is **not a requirement for advancement to candidacy** but is a **requirement for graduation**.

### 3.) 3 ELECTIVES

A minimum of three elective courses, from the partial list of graduate courses, relevant to the field of Integrative Biology in the Charles E. Schmidt College of Science. **See for a list of potential courses** on the Integrative Biology web page (<http://www.science.fau.edu/biology/intbio/index.html>). This list of elective courses is not inclusive. The selection of elective courses to meet degree requirements will be determined by consultation between the student and the advisor and/or the student's advisory committee. Other elective courses than those listed on the website may be chosen, but must be 5000, 6000, or 7000 level courses in biology, biomedical science, chemistry, or approved cognates. Courses designated as proficiency or remedial may not be used to satisfy the course requirements.

## III. OTHER DEGREE REQUIREMENTS

### A. Initial course of study

#### **Supervisory Committee (Formed in the first semester of the first academic year):**

- In the first semester new students should use the Associate Directors (Tanja Godenschwege and Colin Hughes) as temporary advisors, who will help identify appropriate courses to be taken, unless the student has an identified permanent advisor.
- The supervisory committee shall be constituted before the end of the first semester; the chair of the committee shall be the advisor of the student and constitute the supervisory committee in consultation with the student. For students without an advisor, the Program Director or one of the Associate Directors will serve as a temporary chair until an advisor is identified.
- The initial Supervisory Committee shall consist of at least three members, including the chair, whose responsibility is to advise on the initial course of study.
- At least three must be official members of the Integrative Biology PhD Program Faculty.
- The Supervisory Committee shall meet at the end of the first calendar year and evaluate the student's progress. A brief report of this meeting shall be handed in with the Milestones checklist before the FALL semester. **The form can be downloaded here:**  
([http://www.science.fau.edu/biology/intbio/form\\_download.htm](http://www.science.fau.edu/biology/intbio/form_download.htm))
- **NOTE: Continue to hand in an updated Milestones checklist in the following year BEFORE every Fall semester. You will not be able to register for any further course work without it.**

## **IDENTIFICATION OF ADVISOR AND RESEARCH CREDITS**

### 1) Research conducted **prior** to candidacy:

1a) All new incoming students (with the exceptions in 1b below) are required to register in the first semester for **IB Lab Rotations BSC 6905**. In the second semester students

can either continue to do lab rotations until the end of the first calendar year, or can register for **Advanced Research in Integrative Biology BSC 7978**, with the approval of their identified advisor.

1b) Students who transfer from an FAU thesis-masters program or who are being supported by RAs, and hence already have an identified advisor, are not expected to rotate and can enroll for **Advanced Research in Integrative Biology (BSC 7978)** from the first semester on.

Procedure for Lab-rotations and identification of advisor:

Short-term laboratory rotations (3 labs, each 4 weeks, first semester only) or long-term rotations (3-4 labs, each 8weeks) over the first and second semester are an opportunity for faculty and students to meet without making a long-term commitment. Rotations allow the students to be exposed to a broader range of science, to network within the program, and to help the student make a well-informed choice of laboratory and advisors to conduct their thesis research. By trying out several laboratories, students can identify an area of research in which they are particularly interested, and a faculty member with whom they can develop a productive mentor-mentee relationship.

During the rotation, students should participate in all laboratory activities, like any other lab member: they should join in lab meeting, journal clubs, etc. The student could either choose to work with another student or postdoctoral fellow in the laboratory, or take on a simple project achievable in the rotation period.

Students are expected to organize their rotation as soon as possible, preferably during the summer before the first semester or at the latest by the first week of the semester. IB program Associate Directors will help students to schedule rotations based on their interests and on faculty availability. The students will either need to submit 1-2 page reports describing each rotation to the associate directors or give a presentation about their first semester rotations in the IB core course **Integrative Biology 1 (BSC6390)**.

Students are encouraged to select a laboratory for their thesis work by the beginning of their second semester but may continue to do rotations until end of the second semester. However, all students shall have an identified and approved advisor latest by the end of the first calendar year (before the third semester). Students that do not have an advisor by the beginning of the third semester may lose their TA position but in accordance with the Graduate College rules, have one more semester to find an advisor. Therefore, students that do not have an advisor by the end of the third semester will be dropped from the program.

Student and mentor/advisor pairing is based on mutual agreement; however, **please note that the final decision about the student-mentor pairing has to be approved by the Program Director.**

## **B. Advancing to Candidacy**

### **Dissertation Committee: (Formed one semester before Candidacy exam)**

Once students have an identified advisor they shall continue their course as well as research by registering for **Advanced Research in Integrative Biology BSC 7978**. After a sufficient amount of research as approved by their advisor and/or supervisory committee the student shall form their Dissertation Committee. The Dissertation Committee shall consist of at least **FOUR** members, including the chair, whose responsibility is to guide the development of the

dissertation research and administer the Dissertation Proposal review and Dissertation Defense. All four members of the dissertation committee must have a PhD. Non PhD members can serve as consultants or as *ad hoc* members, in addition to the other four. Students must consult with their advisors in selecting their committee members.

- Three of these members can be the same as the supervisory committee.
- At least three of these members shall be Graduate Faculty (non affiliates) from Florida Atlantic University.
- At least three members shall be Program Faculty of the Integrative Biology PhD program.
- One member should be from outside your immediate area of research.
- Students are encouraged to have a **fifth** member who is either an FAU Graduate Faculty (in or outside IB program) or an *ad hoc* member who is not a Graduate Faculty of FAU.

### **C. Defense of Dissertation Proposal (Candidacy examination)**

1.) It is strongly recommended that the Dissertation Proposal should be defended **before the fifth semester (end of second calendar year) but shall be defended no later than the end of the fifth semester**. If the student has not defended by the fifth semester they automatically have failed their first chance of passing their Candidacy exam. In accordance with the Graduate College rules, students who fail the candidacy exam shall have one more semester to pass. If unsuccessful the second time, the student shall be dropped from the IB Ph.D. program. Students without a defended and approved proposal after the fifth semester may lose their TA contract. Students without a defended and approved proposal after the sixth semester shall be dropped from the PhD program.

**Requirement for a dissertation proposal:** Your advisor and/or your Dissertation committee **MUST** agree that you are ready to write your dissertation proposal and take the exam. The dissertation proposal shall consist of two parts, a written proposal and an oral proposal defense. However, a student's Dissertation Committee may specify other requirements as part of the Candidacy exam.

**1a) Written Dissertation proposal.** The student shall submit a research proposal for review by the student's Dissertation Committee **at least two weeks prior** to the oral defense. Failure to do so may result in a delay of the oral defense. The proposal shall be written in the format and structure using the IB guidelines (see VI. Proposal guidelines as laid out in detail in the Scientific Communication course (ENC 6258) unless the Dissertation Committee unanimously decides on another format. It is recommended that students take Scientific Communication (ENC 6258) in the Spring semester of their second year (4<sup>th</sup> semester); this will help them to follow the appropriate proposal guidelines. Finally, the student must seek guidance from his/her advisor or one member of the Dissertation Committee with regard to the content of the proposal **before** submitting and defending it.

**1b) Oral Dissertation proposal defense:** The student will be required to defend the research proposal in a meeting with the Dissertation Committee in which the student's

proposed research and relevant scientific background will be explored in a comprehensive oral format (presentation).

It is the student's responsibility to ensure that the proposal presentation announcement is emailed to all IB-faculty and students at **least one week prior** to the presentation. The announcement should be sent to the program assistant who will forward it to relevant parties. If unforeseen circumstances prevent the proposal defense announcement being sent out on time, there is 24hr grace period, but any time thereafter the candidate shall re-schedule the proposal defense. The oral proposal presentation shall be open to all IB Ph.D. students/faculty.

Following the open presentation the Dissertation committee will meet in private to continue the defense and vote on the defense. The committee may request modifications of the written proposal without a repeat of an oral defense before final approval.

**Students who fail the candidacy exam shall have one more semester to pass. If unsuccessful the second time, the student shall be dropped from the IB Ph.D. program.**

2.) Successful defense of the oral and written proposal shall qualify the student for candidacy, contingent upon satisfactory completion of the core and elective course (s) requirement. Students MAY propose and defend before completion of the course requirements, **but formal advancement to candidacy will be delayed until core course requirements are satisfied.**

#### **D. Administrative responsibilities for advancement to candidacy!**

**NOTE: you will NOT advance to candidacy unless you have fulfilled the following administrative duties:**

1. The chair of your Dissertation Committee informs the program assistant by E-Mail.
2. Update the milestone checklist with your advisor and submit to the Program Assistant.
3. Complete and submit the FAU Admission to Candidacy for the Doctoral Degree, Form 8
4. Complete and submit the Research Compliance and Safety, Form 12
5. Complete and submit the Plan of Study for the Doctoral Degree Form 5
6. Complete and submit the memorandum to the College of Science, Associate Dean, student services.
7. Meet the Director of the program with these forms (# 2-5). A copy of the written dissertation proposal is required for file.
8. Submit all these forms to the Program Assistant, who will then forward them to the College Dean and then to the Graduate College.
9. Once all these forms have been submitted and signed, you will be admitted to Candidacy. You can now register for Dissertation credits but it **has to be done via the program assistant.**
10. Within one month of Admission to Candidacy, submit your research progress report.

**Note: all these forms are online. See [http://www.science.fau.edu/biology/intbio/form\\_download.htm](http://www.science.fau.edu/biology/intbio/form_download.htm)**

## E. Dissertation research and defense of the dissertation

**NOTE: NO earlier than two semesters after** the student has attained candidacy status with the program and the Graduate College, the student is eligible to defend their Dissertation. This results from the requirement of a minimum of 25 dissertation research credits, and the limitation that a student can take to no more than 12 dissertation credits per semester.

- Dissertation research shall be conducted under the guidance of the student's Dissertation Committee. Students shall meet with the advisor and other committee members on a regular basis (at least once a year) as the dissertation research proceeds.
- The student and the advisor **shall submit an annual progress report** approved by the dissertation committee via the program assistant to the director and associate directors at the end of each academic year. Without the annual progress report ([http://www.science.fau.edu/biology/intbio/form\\_download.htm](http://www.science.fau.edu/biology/intbio/form_download.htm)), **No TA contract for the next semester will be approved and students will not be allowed to register for any further course or research credits.**
- Your advisor and the Dissertation committee **MUST** agree that you are ready to defend your dissertation.
- A written dissertation that follows FAU guidelines for formatting shall be submitted for review by the student's Dissertation Committee at least 1 month prior to the oral dissertation defense. It is permissible to use published work as chapters provided their insertion follows FAU formatting guidelines. Students are expected to publish the results of research on an ongoing basis.
- The **Program Director** and Associate Directors must also receive a copy at least 1 month in advance of the dissertation defense.
- **At least one** peer-reviewed publication is expected with the student as first/main author.
- The candidate must announce his/her Defense Dissertation at least one month in advance via E-mail through the program assistant.
- The results of the dissertation research shall be presented in a public forum to which faculty, IB students and other interested parties are invited.
- Following the public presentation, the candidate shall defend the dissertation in a closed meeting with the Dissertation Research Committee.
- The Program Director or one of the Associate Directors will serve as an observer and as the Program's representative at the defense unless another IB-faculty member (who is not part of the Dissertation Research Committee) is assigned by them to serve as an observer.
- At this meeting, the Dissertation Committee shall vote on approval of the dissertation. A majority vote is required; *ad hoc* members do not have a vote.
- Successful defense of the proposal, completion of all other academic requirements, and formal submission of the approved dissertation to the Office of Graduate Studies constitute completion of the requirements for the Doctor of Philosophy in Integrative Biology.
- Students who have completed all requirements stated above shall inform the program assistant about their registration for graduation and leave a future contact address.

**NOTE: you will NOT be able to graduate unless you have fulfilled the following administrative duties:**

- Students must inform the Program Assistant of their intention to graduate.

- Students must have an approved Plan of Study on file with the Graduate College in order to graduate.
- Students must consult the Graduate College for the Graduate Thesis and Dissertation Guideline requirements at: <http://www.fau.edu/graduate/TDGuidelines.php>
- Please consult the Academic Calendar (<http://www.fau.edu/registrar/acadcal.php>) for the following requirements for Graduation:
  - Application for Degree
  - Submission of Doctoral Dissertation

*Students are expected to submit research findings for publication in scientific journals on a continuing basis.*

*It is generally expected that the students graduate **within** five years. Students not finished in five years will have their matriculation in the program re-evaluated and must petition for continuance.*

IV. **E-MAIL:** the FAU email system must be used for all communication with the program.

V. **DEADLINES:** Students themselves are responsible for meeting deadlines.

## VI. PROPOSAL GUIDELINES

### FORMAT SPECIFICATIONS

#### **Font**

- Use an Arial 11pt, Times New Roman 12 points (Symbol font for Greek letters etc)

#### **Page Margins**

- Use standard size (8 1/2" x 11") sheets of paper.
- Use 1 inch margins (top, bottom, left) and 1.5 inch margin on the right for all pages

#### **Page format**

- The Proposal must be single-sided, 1column!
- 1.5-spaced
- Consecutively number pages throughout the application. Do not use suffixes (e.g., 5a, 5b).
- Do not include unnumbered pages.

#### **Proposal length**

No more than 15 pages single-spaced text total (not including figures, legends or references) but is should be still submitted in a 1.5 spaced format!

#### **Figures, Graphs, Diagrams, Charts, Tables, Figure Legends, and Footnotes**

- You may use a smaller type size (10 or 11pt) but it must be in black ink, readily legible, and follow the font typeface requirement.



**Reference style**

Please refer to the Publication Manual of the American Psychological Association (5th ed.) for all citation and reference instructions. Cite in the text alphabetically by author and date, for example: (Hay, 1985; Shimamura & Jurica, 1994). Reference examples are as follows:

**Journal:**

Shimamura, A.P., & Jurica, P.J. (1994). Memory interference effects and aging. Findings from a test of frontal lobe function. *Neuropsychology*, 8, 408-412.

**Book:**

Hay, D. A. (1985). *Essentials of Behavior Genetics*. Melbourne: Blackwell Scientific.

**Book Chapter:**

Connolly, J.B., & Tully, T. (1998). Behavior, learning and memory. In D.B. Roberts (Ed.), *Drosophila: A Practical Approach* (pp. 265-391). New York: Oxford University Press

**LAYOUT SPECIFICATIONS**

**Proposal Structure**

Each proposal should have the following sections in order listed below:

- 1.) Face page
- 2.) Title
- 3.) Abstract
- 4.) Specific aims
- 5.) Background and Significance
- 6.) Preliminary data
- 7.) Experimental design & Methods
  - Each Research Aim should have a section describing:
    - a) Rationale
    - b) Experimental Design
    - c) Anticipated results, pitfalls and alternatives
- 8.) References
- 9.) Figures & Figure legends (at the end of the proposal or inserted into the text).