

**Integrative Biology Ph.D. program at Charles E. Schmidt College  
of Science at Florida Atlantic University**

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## **1. PROGRAM DESCRIPTION:**

Integrative Biology is a multidisciplinary University-wide doctoral program involving the Charles E. Schmidt Colleges of Science and the Biomedical Science at the Florida Atlantic University. The program is based in the Charles E. Schmidt College of Science, and is administered in the Department of Biological Sciences. The program admitted its first students in the Fall 2003.

Integrative Biology refers to cross-disciplinary, multilevel approaches to education and research in biology and medicine. Achieving an understanding of biological phenomena through scientific inquiry is becoming increasingly cross-disciplinary. Hence, a perspective that cuts across disciplinary boundaries and views biological phenomena as integrative processes that span levels of biological organization and scale is considered timely.

The program takes advantage of current faculty strengths in biological sub-disciplines such as biomedical science, ecology, molecular biology and physiology to provide academic leadership and mentor graduate students. The research conducted by faculty in the program contributes to fields such as biomedical science, environmental science, marine biology, molecular biology and plant pathology. While the student's dissertation research may be highly focused in one of the sub disciplines, the program curriculum will provide a context for viewing this research in light of its relationship to other levels of biological organization and processes. The curriculum will be individually tailored to each student's research interests and will be built around a set of core courses that emphasize the theme of Integrative Biology plus statistics, elective courses decided by the student and his/her advisory committee, seminar courses and dissertation research.

## **2. PROGRAM ADMINISTRATION:**

The IB PhD program is administratively housed in the Department of Biological Sciences. A Program Committee (COMMITTEE herein) is established

representing equal participation from Biology and Biomedical science departments. Other representative units, which are currently Harbor Branch (HBOI) and USDA, currently have one member each in the COMMITTEE. At least one of the members of the COMMITTEE is expected to have an appointment in the Center for Molecular Biology and Biotechnology (CMBB), which is a University-wide participating unit in the program.

The Director of the COMMITTEE is appointed by the Dean of the College. The Director is tenured professor (s) and whose term of appointment is for five years. The term for the rest of the COMMITTEE members is also for five years. The Director in consultation with the Dean MAY reappoint the members. The COMMITTEE is responsible for establishing academic policy pertaining to the program, curriculum development and oversight, and overall program evaluation and administration.

This COMMITTEE shall also be responsible for appointment of a Curriculum Committee, a Graduate Admissions Committee and any other committee(s) as it deems fit, each composed of membership derived from the Program's Graduate Faculty and representatives of the MAJOR program participants. These said committees shall have equal participation from the Biology and Biomedical science departments.

A quorum shall require the Director and one member from each participating units. All decisions shall be the result of a simple majority vote. In the event of a tie vote, a motion is deemed defeated unless the Director elects to place the matter before the Program faculty, whose majority decision is binding on the COMMITTEE.

The Director of the Program SHALL distribute the summary report at least once a year to the entire program faculty.

### 3. PROGRAM FACULTY:

A Graduate Faculty in Integrative Biology is appointed by the COMMITTEE. This faculty shall represent the faculty base for the Integrative Biology PhD program, teach the core courses, and be eligible for advising program graduate students.

Faculty members with tenure-track, research professor or courtesy appointments (assistant, associate, or full professor rank in the three categories) in participating departments and centers is eligible for appointment to the Graduate Faculty in Integrative Biology.

Eligibility for appointment to this graduate faculty is based on demonstrated productivity in the areas of graduate education and research through (1) advising graduate students and (2) conducting research and related scholarly activities with a record of recent publications in peer-reviewed scientific journals;

Graduate Faculty members shall also be expected to have active, extramurally-funded research programs;

For faculty members newly-appointed to FAU, appointment to the Graduate Faculty of the Integrative Biology program is through application to the Director and can coincide with the time of the member's first faculty appointment at FAU;

To be appointed, the prospective faculty members shall submit a written request for such appointment to the Director, together with current curriculum vitae that includes appointment and rank at FAU and establishes credentials as an independent scholar in the conduct of scientific research;

All other appointments to the Graduate Faculty in Integrative Biology shall require evaluation and approval by the COMMITTEE of a written nomination submitted on behalf of the applicant by a member of the Graduate Faculty in Integrative Biology;

The nomination is accompanied by current curriculum vitae that establish credentials as an independent scholar in the conduct of scientific research. Such appointees shall have courtesy appointments at FAU in accordance with University policy;

The nominee shall **first** obtain courtesy appointments within the participating units prior to seeking an appointment in the Program; The COMMITTEE *may* require the prospective faculty members to give a seminar;

The term of all prospective appointments to the Graduate Faculty in IB is for five academic years. All appointments **may be** renewed by the COMMITTEE, subject to demonstration by the faculty member of research productivity and participation in at least **one or more** of the activities such as the following at any time during the period of previous appointment:

Supervision of *at least* one student pursuing the doctoral degree;

Membership on at least one examination or advisory committee, excluding those chaired as the major professor;

Major responsibility for a core course for the Graduate Program in IB **OR** a course developed specifically for the Graduate Program in IB, excluding seminars or dissertation supervision; and

Service on committees of the Graduate Program in IB and any committee **specifically** established in participating units to facilitate activities of the proposed program.

#### **4. Admission requirements:**

##### **Application deadlines:**

Applications are accepted only for the Fall admission cycle. The completed applications must be received by January 15. The program **MAY** admit students in the Spring/Summer provided an advisor with financial support is available and willing to take a student. The admissions committee makes the final decision in accepting **ALL** applicants to the IB Ph.D. program. A majority vote is required for an applicant to be admitted.

**Criteria for admission to the Integrative Biology program are based on the following:**

- The admissions committee shall use **stringent** criteria in accepting the students.
- Bachelor of Science degree in a field of biological science or related field.
- Applicants who meet the minimum University standard for grade point average of 3.0 (scale of 0 to 4) and scores of at least 500 each on the verbal and quantitative sections of the Graduate Record Examination are eligible to be considered for admission to the program. Successful applicants will normally show strong performance in their undergraduate course work and on the Verbal and Quantitative sections of the Graduate Record Examination, which exceeds these scores.
- Prior research experience, having a Master's degree or a publication record will be an advantage for admissions.
- Strength of letters of recommendation and personal statement.  
International students whose native language is not English must score at least 213 (electronic version) or 550 (paper version) on the Test of English as a Foreign Language (TOEFL). Satisfactory TOEFL scores can offset verbal GRE scores below 500 at the discretion of the program's Admissions Committee. Additionally international students whose transcripts are from non U.S. institutions must have their credentials evaluated course-by-course as specified in the Graduate Catalog. International students must also demonstrate competency in spoken English.
- The students **must** contact the faculty and ensure that he/she has funds to support the training. The sponsor **MUST** provide a letter of recommendation and a student sponsorship form directly to the program assistant **prior** to the application deadline. Applications without a sponsor will be considered **INCOMPLETE** will not be considered by the admissions committee. The Director **MAY** identify few of the top applications without a

potential sponsor and submit the applications to the admissions committee for consideration. If admitted, the Director shall serve as **interim advisor** for the first semester and help in identifying an advisor.

## 5. FINANCIAL ASSISTANCE.

Financial support for qualified students will be available as Teaching Assistantships in the Department of Biological Sciences and other departments and as Research Assistantships from individual faculty members with funded research programs. Currently the annual stipend is \$20,000. The students are admitted **only** if funds to support them are available for at least three years. Academic year (9 months) TA is guaranteed for admitted students if requested for three years. Summer support is usually the responsibility of the advisor; however, a limited TA support for the summer is available for the Ph.D. students on a priority basis.

TA support generally can be expected for THREE years and upon STRONG justification may be extended for ONE more year only. However, support beyond the first three years is subject to availability of funds.

Preference for TA support shall be given to those advisors without a current student or to junior faculty.

Usual number of Ph.D. students supportable by TA in each lab shall be 1-2.

TA support is **always** subject to the availability of funds.

While no limit is established for the number of students each advisor MAY have, the record of the advisor (publications, Ph.D. students successfully trained and funded grants ) SHALL be used as indicator.

## 6. PROGRAM STUDENTS:

Students MUST be registered as a full time student (24 credits/year). Students shall consult the IB Program Guidelines and the Graduate Policies and Procedures Manual for university-wide policies and procedures prescribed by the Office of Graduate Studies (see <http://graduate.fau.edu>).

## 7. DEGREE REQUIREMENTS:

Doctoral degrees at FAU require at least 80 semester credits beyond the baccalaureate degree. 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:
- 9 credits are in courses designated as core courses;
- The core courses are Integrative Biology I, Integrative Biology II and one statistics course;
- The remainder of the 18 credits is made up of elective courses that will support the student's research plan. The student's major advisor and the Supervisory Committee shall approve all elective courses;
- The elective courses is 5000, 6000, or 7000 level courses in biology, biomedical science, chemistry, or approved cognates;
- Courses designated as proficiency or remedial **shall not** be used to satisfy the course requirement;
- A minimum of 3 seminar courses are required over the entire term of residence in the program;
- The remainder of the credits may be in Advanced Research (BSC 7978) or Dissertation Research (BSC 7980) ;
- Students shall register for Dissertation Research only after advancing to candidacy and
- a minimum of 25 credits of Dissertation Research is required;
- At the time of orientation the students shall SIGN a form indicating that they understand the FAU honors code and issues related to plagiarism.

### 7.1. Supervisory Committee

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.

They must be members of the Integrative Biology Graduate Faculty.

The supervisory committee is constituted **before** the end of the first semester;

The supervisory committee **shall** meet at least once a year to monitor progress of the student;

Following each meeting, the chair of the supervisory committee **shall** submit a written progress report to the Director, noting any deficiencies, and recommended approaches to correct if necessary;

The chair and student **shall** sign the progress report and submit to the program administrator for file;

The chair of the said committee shall constitute the supervisory committee in consultation with the student; the chair's decision is **final**.

## 7.2. Dissertation Committee

Prior to forming the Dissertation Committee, the student shall have completed all THREE core courses. This is expected to occur by the end of the third semester;

Students may propose and defend before completion of the course requirement, but formal advancement to candidacy is delayed until the core course requirement is satisfied.

The Dissertation Committee shall consist of **five** members, including the chair, whose responsibility is to guide development of the dissertation research and administer the dissertation proposal review (Candidacy examination) and dissertation defense;

The DISSERTATION COMMITTEE may have the same members as the supervisory committee. One of the five members of the said committee **shall** be from outside the immediate area of research of the student; one of the member **MAY** be from outside the participating units;

The DISSERTATION COMMITTEE is constituted **before** the fourth semester; the committee shall meet **at least** once a year;

Following each meeting, the chair of the DISSERTATION COMMITTEE shall submit a written progress report to the Director noting any deficiencies, and recommended approaches to correct if necessary;

The chair and student **shall sign** the progress report and submit to the program administrator for file;

The progress report is submitted to the program by Dec 1 of each year the student is registered or within one month of the said meeting.

### **7.3. Proposal of Dissertation (Candidacy examination)**

The student shall submit a DISSERTATION research proposal for review to the Dissertation Committee before the end of the fifth semester. This will be part A of the candidacy examination.

The format for the proposal is *determined* by the dissertation committee.

### **7.4. Defense of dissertation proposal (Candidacy examination)**

The student is required to defend the proposal in a meeting with the Dissertation Committee in which the student's proposed research and relevant scientific background is explored in comprehensive oral format. The presentation will be open to all program students and faculty.

The student is required to submit a grant application (NIH/NSF format) on their proposed research to the Dissertation Committee on or before the day of the oral presentation. The Committee MAY accept other grant formats. This will be part B of the candidacy examination.

Successful defense of the proposal and submission of the grant application (parts A & B) shall qualify the student for candidacy; however, candidacy **will not** be granted before satisfactory completion of the core/elective courses requirement.

Under exceptional circumstances the student MAY be provisionally admitted to candidacy prior to completing the course work. This shall require approval of the

Program Director. A letter addressed to the Director providing justification and signed both by the student and the advisor is **required**.

The Dissertation Committee *may* specify other requirements as part of the requirements for candidacy examination.

#### **7.5. Paperwork requirements for registering for Dissertation credits.**

1. The chair of the Dissertation Committee informs the program assistant by E-Mail.
2. The student updates the milestone check list.
3. The student completes the FAU Admission to Candidacy form.
4. The student completes the Admissions to Candidacy Compliance verification form
5. The student completes the memorandum to the College of Science, Associate Dean, student services.
6. The student meets with the Director of the program with these forms (# 2-5).
7. The student provides a copy of the grant application for file.
8. After these steps the student can register for Dissertation credits.
9. Within one month of Admission to Candidacy, the student submits the research progress report.

#### **7.6. Dissertation research and defense of the dissertation**

The dissertation research is conducted under the guidance of the student's Dissertation Committee;

Upon approval by the Dissertation Committee a written dissertation that follows FAU guidelines for formatting is submitted for review by the student's Dissertation Committee;

The results of the dissertation research is presented in a public forum to which faculty and students of the program as well as other interested parties are invited;

Following the public presentation, the candidate shall defend the dissertation in a meeting with the Dissertation Committee;

The COMMITTEE shall assign at least one external faculty member to serve as an observer and the Program's representative at the defense;

At this meeting, the Dissertation Committee shall vote on approval of the dissertation. At least three out of five members SHALL BE in agreement for approval;

Successful defense of the proposal, completion of all other academic requirements, and formal submission of the approved dissertation to the Office of Graduate Studies constitutes completion of the requirements for the Doctor of Philosophy in IB.

#### **8. TIMELINE:**

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

#### **9. DUE PROCESS:**

The students not meeting the requirements set forth by the supervisory and dissertation committee shall not matriculate;

The students not meeting the requirements shall have an opportunity to address the deficiency in a reasonable period of time. This must be approved by the student's Supervisory/ Dissertation committee;

The students failing the plagiarism standards established by the Program is given a C- to F grade depending on the severity for the required courses;

The students MAY petition to the Department chairs who are responsible for the course delivery on issues related to grades;

The students are also required to abide by the FAU honors code outlined in the FAU graduate guidelines;

If the student wishes to change the research advisor, he/she shall first obtain approval from the Director. Approval shall be **granted** subject to availability of funds in the new sponsor's laboratory. If approved, the student shall complete the candidacy requirements according to the newly constituted Dissertation committee.

If the dissertation proposal defense (candidacy examination) is not satisfactory as deemed by the majority of the dissertation committee, the student shall have an additional semester to address the deficiency. The dissertation committee shall notify the Director of the proposed measure recommended to address the deficiency. The COMMITTEE may elect to have an observer if a subsequent dissertation committee meeting is scheduled to address the deficiency;

The student's final dissertation proposal prior to graduation **MUST** be approved by a majority of the Dissertation Committee;

The student shall have the right to petition to the COMMITTEE to review any grievance. The student shall provide in writing to the Director of the COMMITTEE;

The COMMITTEE may appoint an ad hoc committee to hear the grievance;

The student shall have the right to petition the COMMITTEE if any undue delay occurs in meeting the requirements of the program;

The COMMITTEE shall vote on the petition; its decision is final.

#### **10. OVERALL POLICY:**

All actions of the Graduate Faculty in IB is subject to review and approval by the Dean of The College;

The IB Ph.D. program is consistent in all aspects with the educational policies of FAU.

#### **11. DEADLINES:**

The program faculty and the students are responsible for meeting all the deadlines.

The student shall update an annual milestones checklist (Sep 15) to facilitate oversight by the COMMITTEE.

The student's advisor shall submit an annual progress report to the program assistant at the end of each academic year (Dec 15<sup>th</sup>) starting from the end of second year;

Within one month of Admission to Candidacy, the student submits the research progress report.

## **12. SAMPLE SCHEDULE OF PROGRESS TO DEGREE**

The following is a sample timeline to assist students in making satisfactory progress toward completion of the degree. Each student's progress to completion of degree requirements will be unique and is usually dependent on the length of time needed to complete courses and other preliminary requirements and the dissertation. Students should try to complete course requirements, apart from Dissertation credits, within the first two years. See also the general guidelines of Conditions and Timetable for Graduation in the Graduate Policies and Procedures Manual.

### **Year 1**

- Discuss a program of courses with your advisor in the first semester. Your elective courses should be chosen to strengthen your background in your selected field of study.
- Choose your Supervisory Committee in consultation with your advisor.
- The Supervisory Committee guides the initial course of study.
- A minimum of three members who must be members of the Integrative Biology Graduate Faculty.
- Members of this committee may also be members of your Dissertation Research Committee. In practice, many students may have the same faculty members serve on both the Supervisory and Dissertation Research Committees.

- Meet with your Committee as soon as possible for approval of the plan of courses, no later than semester two of year one, and complete the College Audit for Graduate Program.
- Begin preliminary research and register for Advanced Research in Integrative Biology for research credits during the first year.

## **Year 2**

- Continue preliminary research and register for Advanced Research in Integrative Biology
  - Complete courses
  - Choose your Dissertation Committee in consultation with your advisor
  - A minimum of five members, three of whom must be members of the Integrative Biology
    - This committee will guide your dissertation research and administer the dissertation proposal and dissertation defense
    - Members of your Supervisory Committee may serve on the Dissertation Research Committee.
    - **No later than** semester two of Year 2 or early Year 3, plan to present and successfully defend your dissertation proposal (candidacy exam). You can register for Dissertation credits **only** after your proposal is accepted and have advanced to candidacy.

## **Year 3 and beyond**

- Requirements for the doctoral degree should be completed in three to five years.
  - Complete dissertation research
  - Have a peer-reviewed first authored publication (minimum one) in press before the thesis defense.
    - Submit dissertation to Dissertation Research Committee
    - Public presentation of Dissertation research
    - Successful dissertation defense and approval of the dissertation
    - Submit final copies of the dissertation to the Office of Graduate Studies

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.**

**13. Addendum.**

Any addendum to these guidelines SHALL be approved by the Program Committee.