

**Program in Cancer Biology**  
**Graduate Division of Biological and Biomedical Sciences**  
**Emory University**

*Information and Guidelines for Students and Faculty*

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*The policies and regulations in this handbook are in immediate effect and supersede those in previous versions*

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**Notes on terminology:** despite the common usage within the CB program to refer to all research as “thesis research” and all committees as “thesis committees”, the Laney Graduate School (LGS) uses these terms more specifically. Dissertation is the more appropriate term for the research and document resulting in a doctorate (Ph.D.), while thesis is reserved for those resulting in a Master’s degree. Similarly, the LGS refers to the committee of faculty members that advise the student during the dissertation or thesis research as the advisory committee. We have tried in this document to be consistent with both common usage and LGS usage to minimize confusion by using both terms to introduce key sections of the Guidelines (e.g., see III. F., above). In addition, the LGS uses the term DGS for what we in CB call the Program Director while we in GDBBS typically use the same term/acronym (DGS) for the person, typically working closely with the Program Director, who deals more immediately with student issues. Thus, on all LGS forms where it asks for the signature of the DGS, you should actually get the signature of the CB Program Director.

**Abbreviations used in the text include:** **CB**, Cancer Biology Graduate Program; **DGS**, Director of Graduate Studies; **GDBBS**, Graduate Division of Biological and Biomedical Sciences; **LGS**, Laney Graduate School (also referred to at times as the Graduate School of Arts and Sciences or GSAS); **MSTP**, Medical Scientist Training Program; **PLE**, Post-rotation Laboratory Experience.

These guidelines of the policies and expectations of the Program in Cancer Biology (CB) will be continually reviewed and updated in an effort to keep them current. Official decisions on any aspect are rendered by the Executive Committee in consultation with the Director, DGS, and the faculty of the Program.

The CB Program provides students with the opportunity to develop theoretical and practical research competence in Cancer Biology and related disciplines. Research interests of the faculty are described on-line at the Graduate Division of Biological and Biomedical Sciences (GDBBS) and CB Program websites.

## **PART I. ADMISSION TO GRADUATE STUDIES**

### **A. Admission Requirements and Procedures**

The CB Program is designed for students pursuing a Ph.D. degree or the combined M.D./Ph.D. degrees. Application materials, admission requirements, financial information and degree requirements are available on the GDBBS website. All applications are made to the GDBBS with an indication of interest in the CB Program. The CB Program Recruiting and Executive Committees evaluate applicants principally on research experience, educational background, Graduate Record Examination (GRE) scores and letters of recommendation. A successful applicant typically has a strong science background in chemistry, mathematics, physics and biology. The Program will not admit students wishing to study for a Master's degree.

Applicants who have completed a Master's degree in Biology, Biochemistry, Molecular Biology, Genetics or a closely related discipline (or the equivalent) may request admission directly into Advanced Standing (see definition under Part IV, C below). Applicants interested in the combined M.D./Ph.D. Program should contact the Medical Scientist Training Program, Office of the Dean, Emory University School of Medicine, Woodruff Health Sciences Center Administration Building, Atlanta, GA 30322.

### **B. Admission of Transfer Students**

Students who are currently training in other graduate programs are not normally admitted. We require that such students either complete or resign from their current graduate program before such applications will be considered. However, we will confidentially consider a student's application with an appropriate explanation of why they have not resigned from their current program, according to the following policy:

1. The student must submit a complete application, with the exception of letters of reference.
2. The admission committee will review this material and the applicant will be advised as to the competitiveness of the application.
3. If the student wants to continue the application process, the references will be contacted, as will the director of the current graduate program.
4. If the student's current program has no objections, we will then consider the application using our normal procedures, after completion of the application process through the GDBBS (see above).

## **C. Transfers to Other Programs at Emory**

The Graduate Division of Biological and Biomedical Sciences (GDBBS) supports students admitted to the CB Program. As such, they may choose to do rotations or dissertation research with any of the Graduate Training Faculty of the Division regardless of their program affiliation. Thus, a student may be in the CB Program and his/her dissertation advisor could be a member of a different graduate program. In this case, it is recommended that the dissertation committee be carefully selected to ensure that the student's curriculum provides for training commensurate with other students in the CB Program.

In some cases, the student may wish to transfer to the graduate program where the proposed advisor holds a training appointment. This can result in changes in required coursework or exam scheduling to meet the requirements of the new program. A letter of intent requesting the transfer should be sent to the Director of the student's current program, to the Director of the intended program, and to the Director of the Graduate Division of Biological and Biomedical Sciences.

## **PART II. TRAINING FACULTY MEMBERSHIP CRITERIA**

### **A. Admission Requirements**

The training members of Cancer Biology graduate program must be tenure-track, full-time Emory Faculty, established experts in the fields of Cancer Biology or related biological and biomedical sciences, and should have sufficient extramural funding to ensure support of the students' research projects at the time when a student chooses to work in their laboratories to complete their dissertation research. Examples of documented expertise include doctoral and/or postdoctoral training in the field, and publications in major peer reviewed journals of the areas represented by the program.

An application for membership to the Cancer Biology training faculty requires the following items: (Current GDBBS faculty members are not required to submit items marked with \*)

- an updated curriculum vitae highlighting the Faculty activities and publications in cancer biology
- a NIH-style biosketch including "other support" information
- a one page description of the candidate's research, including a one sentence summary of his/her major research efforts suitable for use in a recruiting brochure and 5 key words including if relevant the main organ-type(s) of cancer studied
- a statement of relevance of the candidate's research to Cancer Biology
- a list of past, present, or anticipated collaborations with CB Program faculty
- a letter to the Director of the Graduate Division of Biological and Biomedical Sciences (GDBBS), if not already a GDBBS member \*
- a letter of support from the candidate's Departmental Chair), if not already a GDBBS member \*
- a description of past experience in training doctoral students or postdoctoral fellows), if not already a GDBBS member \*

The complete application packet should be sent to the Chairperson of the Faculty Membership Committee with copy to the CB Program Director. The Membership Committee will review the application and make recommendations to the CB Executive Committee. Recommended candidates will be invited to present a research seminar open to the Emory community and specifically advertised to the Program faculty and students. The seminar has to occur within 6 months of the initial application, after which the application will be rescinded. The CB faculty will be polled by

anonymous ballot on the acceptability of admission based on the candidate's credentials, added value to the CB program, activity and relevance to cancer biology and acceptance of the research seminar. The ballot needs to have at least 50% participation and a simple majority decides upon the outcome. The Faculty Membership Committee will make the decision based on the results of the faculty ballots and a recommendation will be forwarded to the Program Director and the Executive Committee, who will render a final decision about whether to accept the candidate into the program. Upon reaching a favorable decision, the Chairperson of the Faculty Membership Committee will forward a letter of recommendation co-signed by the Program Director for acceptance to the Director of the GDBBS along with the candidate's dossier. According to the Laney Graduate School guidelines, the candidate's dossier will be forwarded to the Dean of the Laney Graduate School for final approval. Following Graduate School approval the applicant will receive an official letter of acceptance from the CB program Director co-signed by the Chairperson of the Faculty Membership Committee.

GDBBS faculty members are limited to membership in two Programs. Application for admission to a second Program requires only a letter from the Program Director on behalf of the Program Executive Committee requesting such an appointment and a letter from the faculty member detailing how they will contribute to the program. In rare circumstances a Faculty Member may request appointment in more than two programs by submitting supporting letters from the Program Directors to the GDBBS Director and Laney Graduate School Dean. Such a request will only be approved if there is persuasive evidence that the Faculty Member will contribute in a significant way to the mission of all programs involved.

The three types of GDBBS faculty membership are *Full*, *Associate*, and *Adjunct Members*. The definition of membership rights and responsibilities are as follows:

*Full Members* must be tenure track faculty at Emory University in good standing. They have full rights and privileges, including the right to serve on any GDBBS Committee or in an administrative position, and to act as Dissertation Advisors in Programs where they hold this rank.

*Associate Members* must be faculty at Emory University. These faculty members have the rights and privileges of full members, except they may only serve as a Dissertation Co-Advisor. Generally, this membership would be for Research Track faculty, for faculty who may not take a student because of indebtedness to the Stipend Reserve Fund or those who have been judged to be non-participatory during the annual Program Review of participation.

*Adjunct Members* must be faculty or staff of another institution and must have credentials similar to those of our Full Members. They will have all the rights and privileges of full members, except that they may only serve on the University or GDBBS committees ex officio and they may only serve as Dissertation Co-Advisors.

The application for membership will remain the same, except the rank of the proposed appointment must be specified in the letter from the Program Director. All listings of GDBBS faculty MUST contain the rank of appointment and a definition of these ranks. A Full Member must direct all Dissertations, even if the research is being done in the laboratory of an Associate or Adjunct member.

## B. Faculty Responsibilities

The Cancer Biology training faculty members have full rights and privileges, including:

- serving on any GDBBS Committee or in an administrative position
- acting as dissertation Advisors
- voting on the admission of new faculty
- voting at program Faculty meetings
- presenting their candidature for election to the program Executive and other Committees
- proposing amendments to the program Bylaws
- proposing speakers for the Cancer Biology program seminar series
- presenting their own work at the Cancer Biology program seminar series
- proposing new graduate courses in cancer biology
- participating in the annual retreat and other social functions of the program
- presenting their work to the incoming class of graduate students at the annual Faculty presentations

Program members are expected to actively participate in Program functions, including:

- serving as dissertation advisors to graduate students in the Program. The dissertation advisor is financially and intellectually responsible for the development of that student and assumes the major oversight of the student's successful completion of the Ph.D. program.
- serving on dissertation committees
- directing laboratory rotations by first-year students
- teaching in graduate level courses that are part of the CB curriculum
- recruiting new graduate students for the CB graduate program or MD/PhD program
- contributing questions and grading of written qualifying exams
- participation on the oral qualifying exam panels
- attending research seminars offered by the program (which includes, but is not limited to, the student seminar series, those given by Program faculty, and those by invited outside guests that are sponsored by the program)
- participation in recruitment activities
- attending CB Program faculty meetings
- voting on admissibility of new faculty members

## C. Faculty Review

The CB program training faculty members will be reviewed annually. Each year the members will be requested to submit a report detailing their program participation and activities to the Faculty Membership Committee who will determine sufficiency, and make a recommendation to the Executive Committee for membership renewal or for notification of deficiency. It is expected that faculty contributions will be spread in several possible categories, including lab talks, rotations, teaching, recruitment, serving on various committees including oral exams and participate in community building social events. Clearly, a major benefit of being a member of the program is the access to students and those faculty members who take on students are expected to significantly exceed the average contribution. The Chair of the Membership Committee will notify members who are found deficient in Program participation with suggestions for helping them regain a full level of participation. Members on probation become *de facto* Associate Members and may not accept new students and will have one year to demonstrate active participation to meet the requirements of the Program. Faculty members who fail to demonstrate satisfactory participation during this period will be removed

from the Program. The removed members can appeal to the Executive Committee with a rebuttal statement to request reinstatement. If a faculty member being considered for removal from the Program as a result of lack of participation is the advisor of a Cancer Biology student, accommodations will be made to minimize disruptions to the student's progress, in consultation with the Program Director and DGS.

Satisfactory participation includes displaying adequacy in **at least two** of the following categories. Examples of each category are given.

### **1. Teaching:**

- Directing, co-directing or teaching at least 10 contact hours in course(s) within the last three years in a GDBBS graduate course relevant to the CB Program and taken by a significant number of CB students. Undergraduate, medical, and allied health courses are not considered CB-relevant unless they also carry a GDBBS listing and were taken by a significant number of CB students during the three-year period in question.
- Writing and grading Part 1 examination questions.
- Serving on Part 2 qualifying exam committees

### **2. Research Training:**

- Membership on dissertation committees of students in the Program.
- Attendance at a significant number (e.g., >10 / year) of student seminars and dissertation defenses
- Attendance at relevant faculty research seminars.

### **3. Administrative:**

- Holding any executive office in the Program including Director, Director of Graduate Studies, Executive Committee member, Recruiter, active participation in other graduate program student thesis committees, OR
- Holding an executive office in the GDBBS, OR Laney Graduate School of Arts and Sciences (but not within the administrative structure of another program).
- Participation in recruitment efforts is required, including meals and interviews, during the annual recruitment period or individual field visits to recruit at academic institutions.

## **PART III. ADMINISTRATIVE STRUCTURE**

All graduate degrees offered by the CB Program are granted by the Laney Graduate School of Arts and Sciences (LGS) and the Graduate Division of Biological and Biomedical Sciences (GDBBS). The Dean of the Laney Graduate School and the GDBBS Director are assisted in the formulation of policy and the resolution of problems by a GDBBS Advisory Committee, which consists of the Directors of programs offering graduate training. In addition, a Divisional Student Advisory Committee (DSAC), consisting of students from each of the Programs, affords a way for student concerns to be raised and discussed.

### **A. Program Director & Director of Graduate Studies (DGS)**

The Program Director will chair meetings of the Program membership and acts as the liaison between the Program and the GDBBS and LGS. The Director will also serve as the Chair of the Executive Committee of the Program. Candidates for the Director will be nominated and elected by a majority vote of the Program Faculty. Typically, the Director will not be a departmental chairperson and will serve a term of three years.

The Director of Graduate Studies (DGS) shall be elected by a majority vote of the Program membership at large for a three-year term. The DGS will serve as Vice-Chair of the Executive Committee. The DGS is the primary Program resource for the students.

### **B. CB Program Administrative Committees**

#### **1. Executive Committee**

The Executive Committee functions in an advisory role to the Program Director in all matters concerning graduate students and the Program. The committee will typically consist of 9 faculty members, including the Program Director who acts as Chair, DGS, Recruiter and 6 others elected at large by the Program faculty and serving overlapping three-year terms. One student representative, elected by the student body, will also serve on the executive committee for a one-year term and will have full voting privileges except in matters concerning the standing of program faculty or student where he/she will be excused. Student members are charged with providing the Executive Committee with student concerns, suggestions, and feedback as well as communicating Executive Committee actions back to the student body. In the event that an at-large position becomes vacant mid-term, the Program Director shall appoint a CB Program faculty member to serve out the remainder of the vacated term. The duties of the Executive Committee include reviewing applications for admission and financial aid, reviewing graduate student curricula and performance, administering Part 1 and 2 of the Qualifying Examination, assessing faculty participation and membership, facilitating communication both within the Program and beyond, and ensuring that all requirements for a degree have been met. Typically, each member of the Executive Committee will serve as the Chair of one of the program Committees (Recruitment, Part 1 and 2 Exams, Curriculum). The DGS presents students to the Committee each year to assess the progress of the students in the Program, including course work, dissertation advisor selections and dissertation committee composition. The Principal Investigator(s) of a relevant training grant will be considered an *ex officio* member of the Executive Committee. The Executive Committee will meet as frequently as needed to handle programmatic issues. A quorum of 6/9 faculty members is needed to hold valid Executive Committee meetings and a simple majority is needed to make decisions. Any member of the Executive Committee can suggest that important matters need a full membership discussion and vote, at the discretion of

the Program Director. Minutes of the meetings will be taken by the Program Coordinator and archived after review by the Program Director and other relevant faculty members.

## **2. Recruitment and Admissions Committees**

A Recruiter will be selected by majority vote of the Program Faculty and will typically serve a three-year term. The Recruiter serves as the head of a recruitment committee, which is composed of Program Faculty representing the broad research interests of the Program. The committee's main function is to review applications, prioritize applicants selected for interviews, send out invitations, organize the site-visit and interview recruits, and to collect all the information post-visit. The Committee makes a recommendation to the Program Director and the Executive Committee as to the ranking of the applicants for acceptance to the Program. Following approval of the list, the Recruiter informs the GDBBS and Graduate School of the selected applicants who will receive an official admissions invitation to join the program.

## **3. Qualifying Exam Committees**

### **3.1. Part 1 Exam Committee.**

A member of the Executive Committee and 3 other faculty members compose the Part 1 qualifying exam (written exam) committee. The committee solicits exam questions from the course lecturers and composes the exam, which is subsequently approved by the Executive Committee.

### **3.2. Part 2 Exam Committee.**

A member of the Executive Committee serves as Chair of the Part 2 Committee and builds ad hoc exam committees for each student passing their Part 2 qualifying exam (oral exam) and establishes the schedule of the individual exams. The examiners are selected from a standing Committee of 8 faculty members and an ad hoc member selected by the student.

## **4. Curriculum Committee**

A member of the Executive Committee will serve as Chair of the Curriculum Committee. The Committee has 4 additional members, including the DGS. The Committee reviews proposals for modifications to the existing program coursework and additional requirements from the LGS or GDBBS to remain compliant with teaching requirements and regulations.

## **5. Faculty Membership Committee**

The Faculty Membership Director is charged with reviewing any applications of new faculty to the program and making recommendations to the Executive Committee, first, as to whether to proceed with the faculty seminar, and later, as to the suitability for admission. The Faculty Membership Director is also charged with collecting information from all faculty members annually and reviewing the level of participation. The results of that review will be reported to the Executive Committee for any corrective action deemed necessary. The Faculty Membership Director shall appoint a committee of at least three senior faculty members to assist in these reviews.

## **6. Communications Director and Committee**

The Communications Director is charged with oversight of the CB website and with interfacing with Division or LGS staff to ensure accuracy and compliance with any issues surrounding the website or other communications. This will require both routine maintenance and occasionally more substantial overhaul of websites as technologies evolve. The Communications Director is

also the titular editor of the CB newsletter (planned). The Communications Director may appoint a committee of faculty members and students as deemed necessary.

## **C. Dissertation and Thesis Advisors**

One of the most important decisions made by a graduate student is the choice of research advisor. Before deciding on a research advisor, students should discuss possible research projects with program faculty whose work may be of interest to them. This, and the experience from laboratory rotations should allow the student to make an informed decision. Although there is no set of uniform criteria, and individual experience and needs will differ, some factors that the student may want to consider when selecting a research advisor include their level of interest in the research area, the projects available for study, the time, resources and space an advisor has to devote to the student's research, the laboratory environment, and compatibility with the advisor.

### **1. Dissertation Advisor (PhD degree).**

It is expected that at the end of the third lab rotation, each student will select a Dissertation Advisor who will assume the primary responsibility for direction of course and research activities necessary to complete the PhD degree. This will normally occur by the end of the Spring semester of the first year. A student may request to postpone advisor selection and take an additional (fourth) rotation, with the agreement of the DGS.

Students and faculty cannot make any final commitments until completion of three rotations. Once a choice has been made, the student and prospective advisor must complete the *Request for Assignment* form (available on the CB website) and the *GDBBS Advisor Assignment Agreement* form (available on the GDBBS website) and submit them to the Director of Graduate Studies. The Dissertation Advisor is responsible for getting his or her Departmental Chairperson to sign the GDBBS form and must complete the funding documentation portion of the form. The Program Director and Executive Committee will then evaluate the request, making every effort to accommodate the student's wishes. To ensure that the quality of mentoring and training is maintained, the Executive Committee will normally approve the assignment of a maximum of two CB predoctoral students from any single matriculating class to any single advisor. The Executive Committee may waive this rule under exceptional circumstances if adequate justification can be presented.

### **2. Thesis Advisor (MS degree).**

At the beginning of their training in the 4+1 BS/MS program, the students have to identify a host laboratory for their MS thesis work. The students are encouraged to talk to several faculties whose research focus matches their interest. After this process, they will select a MS thesis advisor. The Thesis Advisor will assume the primary responsibility for direction of course and research activities necessary to complete the MS degree.

### **3. Changing Advisor.**

While it is expected that most students will continue their research work with their faculty advisors until they complete their degrees, this relationship may be ended at any time, and by either party (student or faculty). Should this occur, the student and the advisor should contact the DGS immediately. The DGS will then serve as an interim advisor during a transition period while the student identifies a new advisor. During this period the existing dissertation/thesis committee will

continue to serve to help guide the student through the transition. The length of the transition period should be as short as possible, consistent with the ability of the student to make a careful choice of a new advisor, but must not exceed sixty days.

It is the primary responsibility of each student to have an advisor, as the advisor and their lab resources are essential requirements for the student to make scientific progress. If a predoctoral student who has completed at least three rotations or an MS-candidate student are unable to find any member of the GDBBS faculty who will agree to serve as advisor, and this status lasts more than thirty days, then that student will be considered unable to make satisfactory degree progress and may be terminated from the Program after review by the Executive Committee.

## **D. Student Advisory (Dissertation and Thesis) Committees**

### **1. Function and Composition of the Committees**

The primary responsibilities of the PhD dissertation and MS thesis committees is to oversee the progress of the student in the research portion of their training, including assisting the student in creating and executing an original, productive research project, assisting in the preparation of an acceptable written dissertation or thesis, and administration of the final oral examination (*aka*: the dissertation or thesis defense).

The **Dissertation Committee (PhD)** should be selected by the end of year two in residence and the first meeting held no later than six months after completion of Part 2 of the Qualifying exam, typically by the Fall of the third year. The committee is selected by the student in consultation with the dissertation advisor, following which the *Dissertation Committee Selection* form (available on the CB Program website) must be submitted to the CB Executive Committee for approval. Any later changes in the membership of the dissertation committee must be approved by the DGS and is subject to approval by the Executive Committee. Changes to the dissertation committee should be recorded on the *Dissertation Committee Change Form* (Laney Graduate School website) and submitted to the Laney Graduate School office.

The Dissertation committee must include (as a minimum) the dissertation advisor, plus four additional faculty members at least three of whom are members of the CB Program. If desired, one or more additional members may be drawn from the faculty of other programs in the Graduate School or from outside of Emory. The advisor plus any three members of the committee will constitute a quorum for the purposes of a meeting. The advisor must be present at all meetings, and ALL members must be present for the student's dissertation defense.

The **Thesis Committee (MS)** should be selected by the end of October of the first year and the first committee meeting held no later than the end of November. The Thesis Committee must include (as a minimum) the thesis advisor, plus two additional faculty members. At least two of the committee members should belong to the CB Program. The student in consultation with the thesis advisor selects the committee.

### **2. Format of Committee Meetings**

A student scheduled to meet with their committee should prepare a brief written summary (no more than 2 pages) of items to cover during the meeting and distribute it to their committee at least one week prior to the meeting. Rather than re-stating the entire project, this document should focus mainly on the outcome of experiments conducted/ updates since the previous

committee meeting. This will help the committee to determine the extent of interim progress made, allow time for feedback prior to the meeting, and help focus the content of the meeting. The update should include any publications, abstracts, meeting presentations, and awards.

The format of the committee meeting will vary but typically will involve a concise presentation (typically 20-30 min) by the student of the hypotheses and overall objectives of the work, research progress to date, and some discussion of priorities and future plans. The presentation will serve as a platform for the committee to initiate questions and to openly discuss progress, research priorities and directions. If necessary, the committee will deliberate in private to determine if sufficient progress has been made. Specific goals for the next period will be discussed with the student and recorded on the *Dissertation/Thesis Committee Progress* form (on the CB web site). The duration of a committee is variable, but will typically last no more than 1.5-2hrs.

### 3. Frequency of Committee Meetings

The Committee should be considered a source of scientific and scholarly advice for the student, as such the student should feel free to convene a meeting with their committee or individual committee members at any time they feel additional support or direction may be useful.

An important function of the committee is to determine whether adequate progress is being made. Thus, the frequency of meetings may be increased at the discretion of the committee or at the request of the student at any time. In cases where student progress is deemed to be inadequate, the committee may opt to identify specific goals for the following period, which will be indicated in writing on the *Dissertation/Thesis Committee Progress* form. If the committee subsequently determines that lack of progress is due to insufficient effort on the part of the student, this may constitute grounds for cancellation of stipend support or termination from the Program.

The first formal **PhD dissertation committee meeting** must be held no later than six months after passing Part 2 of the Qualifying Exam, typically in the Fall semester of the third year. Thereafter, CB Program predoctoral students are required to meet with their committee **every six months, up to and including year five of graduate study**. In the sixth and subsequent years, students are required to meet with their committee at least every four months. A student's research seminar in the Friday seminar class (CB 790r Advanced Graduate Seminar) can serve as the presentation portion of one of the two required committee meetings, and is in fact encouraged, as long as (1) the required committee quorum is present at the seminar; and (2) a meeting of the committee for directed discussion with the student occurs immediately or closely (within a week) after the formal presentation.

The first formal **MS thesis committee meeting** must be held no later than the end of November in the Fall semester of the first year. Thereafter, CB Program premaster students are required to meet with their committee **every six months, up to and including year two of graduate study**.

### 4. Documentation and Tracking of Committee Meetings

The student should bring a *Dissertation/Thesis Committee Progress* form to each meeting. **This form** (available on the CB website) **must be filled out, signed by the committee members and returned to the CB Program Office immediately after the committee meeting**. The completed form is placed in the student's file and serves as a record to indicate progress in graduate research. The form also contains specific feedback to the student regarding goals to be accomplished before the next meeting. Committee members are strongly encouraged to fill out

this section of the form as it has proven to provide useful guidance and tracking for the student. The DGS and Executive Committee will track compliance with guidelines for committee meetings.

## **E. Student Responsibilities**

It is the student's responsibility to meet the Laney Graduate School and GDBBS requirements for a degree within a reasonable timeframe. All students should familiarize themselves with and adhere to the Graduate Student Honor Code as outlined in the Graduate Student Handbook. This deals with the professional standards and conduct demanded of all graduate students, as well as the procedures for reporting and adjudicating any violations. **Continuance of stipend support is predicated upon satisfactory progress by the student toward a degree and adherence to the Honor Code.**

## **F. Grievance Policy**

Students who have a grievance related to some aspect of the CB program should report it to the Director of Graduate Studies. The student should describe the grievance and relevant details in a letter addressed to the DGS and copied to the program Director. The DGS will try, if possible, to resolve the grievance in conversation with the student and relevant parties. If this is not successful, the CB program Director will appoint a committee of three CB program faculty members (or faculty members outside the CB program if the situation warrants) or use the Executive Committee, who will review the grievance and propose an appropriate response. If it is impossible to resolve the grievance within this committee or within the framework of the CB program administrative structure, the Director will forward the grievance to the Office of the Senior Associate Dean of the Laney Graduate School. From this point forward, the grievance will be handled according to the Grievance Procedure outlined in the Laney Graduate School Handbook. If the issue is with the DGS, the student should send the letter directly to the CB Program Director. If the issue is with the Program Director, the student should go directly to the Senior Associate Dean of the Laney Graduate School.

## **PART IV. PHD PROGRAM REQUIREMENTS**

### **A. Coursework**

All CB students take the required coursework in years one and two. This core curriculum is intended to give each student the necessary foundation to be successful in biomedical research, including graduate training in the basic sciences and formalized instruction in oral and written scientific presentations. Students may take additional coursework; the core curriculum is intended to indicate the **minimum** requirements for all CB students.

Each student in year two and beyond will have customized elective(s), agreed upon by the student and dissertation advisor. Students must take a minimum of one elective. Credits from Directed Study, unless approved by the DGS, do not count towards the one-elective requirement. All CB students must register for, attend, and pass the weekly graduate student seminar series (CB790r Advanced Graduate Seminar), in both the Fall and Spring semesters until their dissertation defense is scheduled. Each student in year two and beyond is required to present their research results annually in this forum. A senior student who plans to complete their dissertation defense within a given semester may request to be excused from presenting in CB790r only if their scheduled seminar date is within three months of their dissertation defense date, and after consultation with the Course Director of CB790r. During the first two years of classes the students will be exposed to 8 hours of training in the area of scholarly integrity as part of the courses CB570r (year 1) and CB790r (year 2). The topics covered will include data management (0.5h), mentoring (0.5h), authorship (0.5h), peer-

review (0.5h), collaboration (0.5h), human subjects (1h), animals (1h), scholarly misconduct (1h), conflict of interest (1h), ethics of teaching (0.5h), and public scholarship (1h).

Required Courses are marked in **BOLD**

*NOTE ABOUT ELECTIVES: The list of available courses is continually changing so students must consult the current Laney Graduate School Course Atlas to obtain accurate information. Not every elective course is offered every semester or every year.*

*\*Credits = Credits counting toward full-time status for that semester (must total at least 9 per semester)*

*\*\*Credits to AS = Credits acknowledged by Laney Graduate School that count toward the 24 needed to achieve Advanced Standing.*

*\*\*Credits to Cn = Course credits acknowledged by Laney Graduate School that count toward 16 needed to achieve Candidacy*

*\*\*\*Credits for Fall Term Laboratory Rotations are awarded in Spring Term, when final grade is determined after completion of all 3 rotations.*

*# Students will be required to take two Elective courses totaling at least 7 credit hours in year 2 which will be applied toward their requirement for candidacy*

Course #	Course name	Credits*	Credits AS**
<u>Year 01-Fall</u>			
<b>IBS 555</b>	Principles of Basic Biomedical and Biological Sciences		
<b>IBS 523</b>	Cancer Biology I	4	4
<b>CB 570r</b>	Introductory Graduate Seminar	2	2
<b>CB 597r</b>	Laboratory Rotations	2	2
<b>JPE 600</b>	Jones Program in Ethics course	1	0
<b>CB790r</b>	Advanced Graduate Seminar	2	2
<u>Year 01-Spring</u>			
<b>IBS 524</b>	Cancer Biology II	4	4
<b>CB 570r</b>	Introductory Graduate Seminar	2	2
<b>CB 597r</b>	Laboratory Rotations***	2	2
<b>CB790r</b>	Advanced Graduate Seminar	2	2
<u>Year 01-Summer</u>			
	Advisor chosen, dissertation research underway, TATTO training		
	Part 1 – Qualifying Exam (June)		
			TOTAL: 20

Course #	Course name	Credits*	Credits Cn**
<u>Years 02-Fall</u>			
<b>IBS 761</b>	Cancer Pharmacology	3	3
<b>CB 790r</b>	Advanced Graduate Seminar	2	2
<b>IBS XXX</b>	Elective # (Grant writing course or other)	3-4	3-4
<b>IBS 699r</b>	Advanced Research (until approved for candidacy)	4	0
<u>Years-02-Spring</u>			
<b>CB 790r</b>	Advanced Graduate Seminar	2	2
<b>IBS XXX</b>	Elective #	3-4	3-4
<b>IBS 562</b>	Cancer Clinical Colloquium*	2	2
<b>IBS 699r</b>	Advanced Research (until approved for candidacy)	4	0

	Part 2 Qualifying Exam (to be completed by June)		
<u>Year-02 - Summer</u>	Dissertation committee chosen; first committee meeting scheduled for Fall		
			TOTAL:14
<u>Years-03 and beyond</u>			
<b>CB 799r</b>	Dissertation Research (to make total units = 9 per semester)	9	9
<b>CB 790r</b>	Advanced Graduate Seminar	2	2

*\*this course is offered every other year, so students will take it in year 2 or 3*

## B. Grade Criteria

Grades in the Laney Graduate School range from A (4.0) to C (2.0) and F (0); there is no D grade. Some courses are taken on a Satisfactory/Unsatisfactory (S/U) basis. Advisors will assign grades in IBS699r (Advanced Research) or CB799r (Dissertation Research) and are encouraged to use grading that reflects performance and overall progress made each semester. Students must maintain an average of B (3.0) or better in coursework each semester. Students with a semester GPA below 3.0 will be put on academic probation, and be notified in writing of such by the LGS. Students on academic probation due to their grade point average have one semester to bring their grade point average above the minimum. Students who receive a grade of less than B in a required CB course will be put on academic warning in the program. They will be notified in writing by the Program Director and the DGS and the Executive Committee will be informed.

GDBBS policy dictates that a grade of U or F in any course, or a semester GPA below 3.0 in any two semesters, will result in dismissal. If a student who is dismissed believes there were extenuating circumstances that adversely affected his/her performance, he/she may submit to the division Director a written appeal for consideration of reinstatement. The appeal should clearly outline the extenuating circumstances and must be submitted within one month of grades being recorded by the Office of the Registrar. The GDBBS Executive Committee will review all appeals.

*Repeat assessment of unsatisfactory progress by the student's dissertation committee also constitutes grounds for termination from the Program.*

## C. Coursework Credit Hours (credits) – Requirements

**Full Standing** The core curriculum in year 01 gives students the 18 credits needed to progress to Advanced Standing. At least 12 of 18 credits must be in course work other than Directed Study (597r or 797r), Advanced Research (IBS699r) or Dissertation Research (CB799r) and at least 14 credits at the 500 level or above. Credit from TATTO, Jones Program in Ethics (JPE 600), and any English as a Second Language (ESL) courses do not count toward a degree in either full or advanced standing years.

**Advanced Standing** The Laney Graduate School requires a minimum accumulated coursework of 36 credits in Advanced Standing for the Ph.D.: 24 credit M.S. requirements or equivalent, 32 credits in Dissertation Research 799r, and 16 course credits in

*Advanced Standing.* All 16 course credits must be at 500 level or above. Note: Following admission to Advanced Standing, a minimum of 36 credit hours must be accrued before a student may become eligible to advance to candidacy (see *below*).

At the discretion of the Executive Committee, a student may be admitted to Advanced Standing by fulfilling either of the following criteria: 1) after 24 semester-hours residence credit in full standing at Emory (usually two academic terms) or 2) entry into Laney Graduate School of Arts and Sciences with a Master's degree or equivalent in the same, or a closely related, field of study. In the latter case, the student must petition the Executive Committee to achieve Advanced Standing.

#### **D. Residency Requirements (Same as Laney Graduate School requirements)**

<b>Full Standing</b>	2 full semesters (minimum of 9 credits / semester) Courses applied toward residency requirement must be on 400-level or above and exclude English language (ESL) classes and PSI 600 (Program for Scholarly Integrity).
<b>Advanced Standing</b>	4 full semesters (minimum of 9 credits / semester) Courses applied toward residency requirement must be on 500-level or above and exclude English language (ESL) classes and PSI 600 (Program in Scholarly Integrity).
<b>Candidacy</b>	As soon as the requirements are met, students <b>must</b> submit the application for <i>Admission to Candidacy</i> form (available in the Division office and on the CB Program website) with the appropriate signatures. <b><i>Under no condition should an application for Admission to Candidacy be filed less than one semester before the semester in which the PhD is to be awarded.</i></b> To be eligible to advance to candidacy, 36 credit hours in Advanced Standing must be completed as detailed in Section C, above.

#### **E. Laboratory Rotations**

Laboratory rotations expose students to different research approaches and techniques of modern science. They help define a student's research interests and assist in the selection of an advisor by providing the student with an opportunity to sample different lab environments/research areas, to assess available research projects, and to evaluate compatibility with the lab and potential advisors. Rotations also allow faculty to observe and evaluate the aptitude of first-year students for research. Expectations for time spent in the laboratory should be clearly established between the faculty member and the student before beginning each rotation. In general, students are expected to be working on their projects when not attending class or studying.

Students are encouraged to use the Faculty research talks (held in the first 2-3 weeks of the first Fall semester) and to talk to several potential rotation advisors before deciding in which labs they are interested in rotating. Selection of rotations should be made in consultation with the DGS, who will serve as advisor until a student has decided upon a formal dissertation advisor. A *Rotation Advisor*

*Selection* form (available on the CB Program website) must be submitted to the DGS for each rotation.

Students are expected to complete at least three rotations in their first year. The student may also treat as one rotation, any lab experience of at least 8 weeks duration in a CB faculty member's laboratory in the summer before formal entrance into the Program ("head start" program). Students may also choose to do a fourth rotation in the summer following the first academic year.

Upon completion of each rotation, the student will be required to give a 15 min oral presentation as part of a mini research symposium consisting of all rotation students and their advisors to be held within one week of the completion of the rotation period, and should be in the format of a short research report detailing the introduction/goals, experimental methods, and results. Laboratory rotations are graded with a letter grade (A, B, C or F), and are determined by the faculty sponsor and reported to the DGS. A *Laboratory Rotation Completion* form (available on the CB website) should be completed by the student and rotation advisor and submitted to the DGS.

## **F. Teaching Experience**

The Laney Graduate School requires each student to serve as a Teaching Assistant (TA) for at least one semester during their graduate career, usually during the second year. The primary purpose of the teaching experience is to aid students in strengthening organization and communication skills. Prior to beginning the teaching experience, students are required to participate in the Teaching Assistant Training and Teaching Opportunity (TATTO) course. If the student has had substantial teaching experience he/she may request to have the requirement waived. See the TATTO coordinator in the GDBBS office for further details on how to document your experience.

Teaching opportunities for GDBBS students vary by the type of course, amount of responsibility, and time commitment associated with the teaching assignment. Teaching experiences range from overseeing one component of a laboratory course meeting once each week to co-teaching an undergraduate class with one or more professors. Students are encouraged to state a preference for the type of assignment.

For students wishing to gain more pedagogical experience, additional teaching opportunities are available beyond the one-semester requirement, some of which may provide additional academic credit or a small additional stipend.

## **G. Steps to Degree**

### **1. Qualifying Exams (Parts 1 and 2)**

#### **Part 1**

Part 1 of the qualifying exam is a written examination of "general or background" knowledge and critical thinking, and is designed to test general knowledge of cancer biology and other basic biomedical sciences as laid out in general texts and covered in the core introductory courses of the Program. The goal of the Part 1 exam is to test both the knowledge base and critical thinking/writing of each student so that both the student and the Faculty can determine whether that student is prepared to progress in the Program. Hence, some questions on the exam may draw on specific information exposed to in classes or seminars, while other questions will require that students interpret and synthesize given data, propose hypotheses and describe appropriate experiments to test those hypotheses.

**The Part 1 exam is given during June of the first academic year in residence** and consists of a written examination of essay-type questions. The examination is closed book and is administered over the course of one day. The examination is prepared from questions solicited from the Program faculty and reviewed by the CB Executive Committee. At the end of the exam, each answer is independently evaluated by at least two faculty members who each assign a numerical grade. The exam consists in 10 questions covering the breath of topics in cancer biology and related basic biomedical sciences. The students have to answer 8/10 questions. To pass the exam, students must (1) score 7/10 or higher on 6 out of the 8 questions they choose to answer and (2) receive a composite score of 70% or higher. At the consideration of the Executive Committee, a student failing to achieve these minimum standards will be allowed one re-take of the exam. The student must have achieved at least a 60%, and the exam must be held within 1 month of having failed the 1<sup>st</sup> exam. The re-take decision will be based on the exam as well as the student's overall performance in the program to date. The retake exam will be an oral examination by 4 members of the Executive Committee and the student will pass if no more than one of the examiners disapproves. Students who fail the second attempt will be dismissed from the Program. A passing score on Part I of the Qualifying Exam is required for a student to proceed to Part II.

## **Part 2**

Part 2 of the qualifying examination takes the form of an oral examination consisting of the oral defense of a written research proposal and an oral examination to evaluate the students' mastery of scientific concepts, including material covered in Part 1. The exam is designed to assess the student's ability to integrate different aspects of the first two years of graduate training; including lab work, data interpretation, hypothesis development, research design, presentation of research, and mastery of required CB coursework. As such, questioning will draw on aspects of the scientific principles, knowledge of the pertinent literature and defense of the hypotheses and experimental design as laid out in the written proposal, but will in addition more broadly address the student's mastery of relevant scientific concepts. In addition to possessing a broad range of facts and knowledge, the student must demonstrate an ability to synthesize information and display systematic reasoning skills. The exam **must be completed before the end of June** of the student's second year in residence.

The written proposal should focus on the student's dissertation research and must be distributed to the Oral examining committee at least one week prior to the oral examination and should be written in a format similar to that of an NIH or other fellowship application (i.e. specific aims, significance, innovation, research design and methods). The inclusion of preliminary data in support of the proposal is optional, but can include the student's own data or that generated by the lab. The purpose of the proposal and defense is not to determine the ultimate content of the student's doctoral dissertation. Thus, the student should be less concerned with preliminary data than with the knowledge of theoretical and technical issues related to the proposed studies. Although the written proposal helps to focus the first part of the oral examination, it is not evaluated *per se* by the committee.

The examination will begin with the student providing a 5-10 minute overview of their current research using the dry ink board (no slides/overheads). The examination then follows an Oral examination format in which each committee member is given up to 10 minutes to ask any question they deem appropriate, without interruption by other committee members, followed by 5 min open examination by all members of the committee as follow-up. This format continues until each of the four exam committee members has had the opportunity for two 10 minute periods in

which to ask questions (i.e. twice around the table, for a total of no more than two hours (8 x 15 minutes). The first round of questioning will constitute the defense of the written proposal, whereas the second round, will more broadly assess mastery of scientific concepts and synthesis as laid out above. The student or any member of the committee may call for a 5-10 minute break between rounds. The second round of ten-minute question periods per committee member may be shortened at the discretion of each committee member.

A committee consisting of three members of the standing Oral Exam Committee and one CB member chosen by the student will administer the exam. One member of the standing committee will serve as Chair, and is responsible for being fully apprised of all rules surrounding the exam. Prior to the start of the exam itself, the Chair of the Examining Committee will describe to all the purpose of the exam, the rules of engagement, and the criteria by which the evaluation will be performed. The research advisor will be present for the exam but their participation will be restricted to time keeping and observation. The advisor will not participate in the examination or discussion of outcome.

Following the completion of the oral examination, the student and advisor are excused from the room and the student's performance discussed by the committee. At least three of the four voting members of the examination committee must cast a passing vote in order for the student to pass the exam. The entire committee informs the student of the results of the exam the same day. In the case of a failed exam, the Executive Committee will decide whether the appropriate response is to allow the student to re-take the exam or there is sufficient cause for termination from the Program. In general, students who required two attempts to pass Part I of the qualifying exam must pass Part 2 of the qualifying exam on the first attempt and will not be given an opportunity for re-take. If a re-take is proposed, it must be scheduled to occur within 30 days of the original exam. Any student failing the re-examination will be dismissed from the Ph.D. program but may, with the approval of the examination committee and advisor, petition the Executive Committee to change their course of study to one of a terminal Master's degree.

## **2. Application for Admission to Candidacy, Doctor of Philosophy**

This application should be made as soon as preliminary requirements are met, but **must** be made at least one semester before the semester in which the Ph.D. is to be awarded. The *Application for Admission to Candidacy* form is available on the LGS website.

## **3. Written Dissertation document**

The first step towards completion of the PhD degree is the submission of the written dissertation document.

During the period of research, the dissertation committee must meet with the student at least every six months up to and including year five of graduate study, and every four months in year six or beyond, to review the progress of the research and the preparation of the dissertation. Upon completion or anticipated completion of the dissertation research the committee grants permission to the student to write the dissertation document. This "permission to write" is indicated by the check box in the committee meeting report. A maximum period of six months (four months for students in year six and above) is permitted between the time a student receives approval from their committee to write and the private examination (private dissertation defense) takes place. Failure to meet this

deadline will require another committee meeting at which a decision must be made to extend this deadline or take alternative actions resulting from failure to progress toward the degree. An *Application for Degree* form (available on the LGS and CB Program websites) must be completed and submitted in the semester in which the degree will be awarded. The student must make petitions for exceptions in writing to the CB Program Director and DGS.

**Structure of the written dissertation.** The general organization of the dissertation should be discussed and approved by the advisor and committee before it is written. The written dissertation must conform to Graduate School Guidelines, but in general will consist of an original account of the background, approach, experiments, and conclusions of the dissertation research. Instructions for the format (e.g., font, margins, figures, etc.) of written dissertations can be found on the LGS website. Published papers may be bound as chapters in the dissertation, with approval of the committee, but original introductory and concluding chapters must be added. The cost of preparation of the dissertation is borne by the student. Except in very rare circumstances, there will be one or more first author, primary, peer-reviewed papers authored by the student that shall have been published or accepted for publication before the dissertation defense is scheduled. After the dissertation has been read and approved by the dissertation research advisor, the student must give a hard copy to all members of the committee. The dissertation must be a complete professional document at this time, including cover page, table of contents, chapters with fully formatted citations, final figures with legends, reference section and pagination. The candidate will verify that the dissertation meets all graduate school requirements. *No sooner than two weeks* after distribution of the dissertation the private defense will be held. This length of time should give committee members enough time to read the dissertation thoroughly before the meeting. The unanimous approval of this document by the student's dissertation committee is required before proceeding to the private defense. Recommendations for substantive changes to the dissertation by committee members and revisions of it by the student must be made prior to the private defense. Unanimous approval of the written dissertation is required as a component of a successful private defense. Requests for minor editing/corrections of the written dissertation may still occur at the private defense, and must have been completed before the scheduling of the public defense. All members of the committee must approve and sign off on the written dissertation before the public dissertation defense can be scheduled, and prior to submission of the final document to the LGS.

#### **4. Defense of the Ph.D. Dissertation**

After the written dissertation has been formally submitted and approved by the dissertation committee, the students have to complete a closed-session oral examination (private dissertation defense) and an advertised, public seminar of the research (public defense) before graduation.

**a) Private dissertation defense.** The oral examination (dissertation defense) takes place at the same committee meeting where the written dissertation is approved. Approval by the entire committee of both the written dissertation and oral defense are required. The committee has to receive, at least 2 weeks prior to the meeting, the formal dissertation document. The committee members will inform the student if any substantive changes to the dissertation are required, in which case the private defense will be postponed till they are completed. The private defense will start with a short (up to 20 min) professional presentation summarizing the dissertation. The examination then follows an oral examination format in which each committee member is given the opportunity to ask questions. The candidate must orally defend the dissertation and related areas to demonstrate an appropriate level of knowledge and expertise in research design and interpretation. At no time during the oral defense should the advisor answer questions posed to the student. After the exam, the student will be excused, and the student's performance will be discussed and evaluated by the committee. All committee members must confirm in writing that the student has successfully defended the dissertation. Alternatively, any perceived deficiencies must be documented in a specific plan for remediation at this meeting.

All committee members must be present for this final committee meeting/private defense. If due to extenuating circumstances a committee member misses the meeting, they must inform the DGS and meet individually with the student to both approve the written dissertation and perform an oral examination in the presence of the student's advisor.

After the unanimous approval of successful completion of the oral dissertation defense, the student will complete all final changes to the written dissertation, and have the final document approved by all committee members. Thereafter, the student shall schedule the public seminar to be held no sooner than two weeks after the private dissertation defense.

**b) Public dissertation seminar and defense.** The dissertation seminar is a formal scientific presentation and public defense. The dissertation research advisor will formally outline the format of the seminar to the audience and introduce the student and their research in a manner similar to other research seminars. The format for the public seminar consists of a seminar (~45 minute) by the candidate that includes a broad introduction tailored to a public audience, an introduction to the specific topic of the dissertation project, a summary of the key findings, its significance, and future directions. After the student's presentation, the dissertation committee members can each ask questions in the presence of the audience. Subsequently, the presentation is open for questions from the public. Once all questions from the public have been answered the Dissertation Committee leaves the seminar room to deliberate whether the student has passed the final public examination and can decide to recognize a PhD of exceptional merit with "special commendation from the jury". Once the Committee reaches a unanimous decision, they return to the room and publicly announce the result. In case of failure to pass the public defense, the Committee will state the reasons in writing to the candidate and propose a remediation plan and announce publicly that the requirements are not met and the graduation postponed.

The atmosphere should be one that encourages dissemination of scientific knowledge to the public and critical questioning so that the student can demonstrate his/her expertise in an open forum. The dissertation seminar tests the student's ability to communicate scientific information to a public audience and helps the public understand the research done at the university level. The questions by the Dissertation Committee should be more 'big picture' as the more technical and detailed questions will already have been addressed at the private defense. Care must be taken to preserve the formality of the occasion as befits an examination. The program director or the student advisor will serve as emcee and encourage questions from the audience.

Only after the Committee has formally announced the result, are personal congratulations, personal comments by the advisor or student and mention of subsequent celebration made. It is allowable for one (and only one) member of the committee to be absent from the public seminar, to facilitate scheduling and timely completion of required components of the degree.

## **5. Report of Completion of Requirements for Doctoral Degree**

Upon submission of a written dissertation, completion of a successful oral defense and seminar, the student must complete and submit to the Division office the *Report of Completion of Requirements for Doctoral Degree* form (available on the LGS website).

## **H. Terminal Master's Degree**

Under certain circumstances, student in the doctoral CB program may request permission to terminate graduate study by completing the requirements for a terminal Master's degree. These include, for example, failure to pass Part 2 of the Qualifying exam. Based upon the student's performance, as assessed at various times during the degree program, the Executive Committee may also recommend such action. The request to seek a terminal Master's degree should be made in writing to the Program Director. The Executive Committee in consultation with the dissertation advisor will make the decision. *It should be noted that there is no guarantee of continued stipend support once a student has declared an intention to seek a terminal Masters degree.*

Students may declare their intention to seek a Master's degree only after having passed Part 1 of the qualifying exam. When a student declares after passing Part 1, he/she should immediately discontinue enrollment in didactic coursework and Teaching Assistant Training and Teaching Opportunity (TATTO) activities. To remain in standing as a full-time student, the student must continue to enroll for the required number of credit hours of dissertation research. The student will have a maximum of one year from date of declaration (i.e. the end of the Spring semester of year 3) to complete the requirements for the Master's degree.

When a student declares an intention to seek the MS degree during the third year in residence, (i.e., after successful completion of Part 2 of the qualifying exam) and having met all requirements for the doctoral program up to that point), the student must complete the requirements before August 1 of the third year in residence.

If a student has been in residence for three years or more, having met all requirements for the doctoral program up to that point, and then declares for the MS, the student will have three months to complete the requirements for the MS. Students who have declared their intent to pursue a MS degree but fail to meet the requirements within the specified time will not be eligible to receive stipend support from any source, and will be asked to leave the Program.

Requirements for the MS degree include satisfactory completion of all required coursework, passing Part 1 of the qualifying exam, completion of a written Master's thesis, and an oral defense of the thesis research. Students seeking an MS degree are not required to participate in the TATTO program. A master's thesis committee must be formed as described for the dissertation committees in the doctoral program. The master's thesis must represent a scholarly body of work indicating a rigorously applied research effort and must minimally describe the significance of the research proposal, the hypotheses being tested, the experimental approach(es) undertaken, any data generated, conclusions drawn, and a proposal for future work. Both the written master's thesis AND its oral defense must be passed by the master's thesis committee before a degree is awarded. The decision by the master's thesis committee to award the degree must be unanimous. Attendance by the thesis committee members is sufficient for the Master's thesis oral presentation, e.g. there is no public defense.

Upon completion of all of the requirements, the student must complete a *Report of Completion of Requirements for Master's Degree*, which the members of the dissertation committee must sign indicating their vote. The Program Director or Director of Graduate Studies must also sign this form. An *Application for Degree* form must also be completed and submitted to the GDBBS. These forms are available from the Laney Graduate School, the GDBBS office or the CB web site. Both signed forms must be returned to both the Division Office and the Laney Graduate School.

## **PART V. CB GUIDELINES FOR THE COMBINED M.D./PH.D. DEGREE PROGRAM**

### **A. Participation in the CB Program**

MSTP students choose a dissertation advisor and a graduate Program under the guidelines of the MSTP. Unless otherwise specified, the MSTP student is expected to fulfill all the program and LGS requirements for the Ph.D. degree and to participate fully in the CB Program as outlined above. MSTP students are subject to the same rules outlined in the CB Guidelines. Because MSTP students enter the CB program in the middle of the M2 academic year, the course of study differs from that of PhD-only students. Curriculum guidelines are described below, but it is important that new students meet with the Director and/or DGS to assist in the development of a personalized training plan.

## **B. Coursework requirements**

MSTP students are admitted to the graduate Program in Advanced Standing and are expected to start graduate coursework/rotations in the Spring semester of the M2 year, in accordance with MSTP program guidelines. Under normal circumstances, specific core courses (e.g., IBS 555) in the first-year graduate requirements are waived. MSTP students are required to take the CB core coursework, including Cancer Biology I and II (IBS523/IBS524) and Cancer Pharmacology (IBS761). MSTP students are encouraged to fulfill the Cancer Biology II requirement during the Spring M2 semester. MSTP students should also be enrolled in Advanced Graduate Seminar (CB790r) throughout their graduate training, including the Spring of the M2 year.

Requests for exceptions to these course requirements must be submitted in writing to the Program Director and DGS of the CB Program and will be evaluated on a case-by-case basis.

## **C. Teaching Requirement**

The teaching requirement of the Laney Graduate School is to be fulfilled by the end of the G2 year. Exceptions to meet this requirement beyond the G2 year will be granted on a case-by-case basis.

## **D. Timing of Qualifying Exams**

Part 1 of the Qualifying Examination will normally be taken at the end of the MSTP student's first year in graduate residence (i.e. at the end of G1), with the first year PhD students. Part 2 of the Qualifying Exam will be completed by the end of June, approximately one year after completion of the Part 1 exam (i.e. at the end of G2), on schedule with the 2<sup>nd</sup> year graduate students. Policies regarding the requirements for passing the exam and mechanisms for re-examination and appeal are as described above for the Ph.D. students.

## **E. Length of Time to Degree**

MSTP guidelines encourage the completion of the Ph.D. portion of the degree in three years. While every effort will be made to meet this guideline, it should be recognized that the student is expected to complete a dissertation based upon original research, and that this dissertation must meet both the MSTP and CB standards as outlined above. Expectations regarding authorship on publications or other standards for the PhD degree must meet or exceed those set by both programs. Consequently, it may be necessary to extend the degree program beyond the three-year guideline.

## **PART VI. CB GUIDELINES FOR THE 4+1 BS/MS PROGRAM IN CANCER BIOLOGY AND TRANSLATIONAL ONCOLOGY**

### **A. Goal of the 4+1 Program**

The 4+1 BS/MS program focuses on training the next generation of cancer professionals who may seek a variety of career paths in which a MS degree in Cancer Biology and Translational Oncology will provide them with advanced knowledge and expertise in cancer biology and translational oncology, yet without the need for a full 4-5 year laboratory training in research as we offer with our PhD degree. The 4+1 is restricted to Emory undergraduate students.

### **B. Coursework requirements**

The 4+1 program provides 38 graduate level credit hours (20 in required courses and 18 in laboratory research), which exceeds the minimal requirement for a MS degree in the graduate school (30 credit hours). At the start of their fourth year of undergraduate study the students will select a faculty advisor and be introduced to laboratory-based scientific research. Once they complete their senior year, the 4+1 students will stay on through the summer and complete a fifth academic year (the “+1” year), during which they will continue their graduate coursework (9 credit hours in fall and spring semesters).

The students will start their MS laboratory research in their senior year by taking the undergraduate course Biol499r (4 credits; about 16h/week in the lab) in the fall and spring semesters. By November of year 4 they will select their MS thesis committee composed of their Advisor and two additional faculty. This committee will meet every 6 months and will help guide the student’s research. The students will continue their research project during the summer and through the fall and spring semesters of year 5 under the aegis of course IBS599r (Advanced Research; 6 credit hours/semester).

The students core curriculum consists of the following courses:

Cancer Biology I (IBS523) and II (IBS524) in year 4. This course provides the fundamentals about cancer, including the hallmarks of cancer and the molecular mechanisms underlying them. Each course features two written exams with combined essay and knowledge based questions.

Advanced Graduate Seminar (CB790r) in years 4 and 5. This course is a cancer biology seminar where invited speakers present their research every Friday at noon at the Winship Cancer Institute (Elkin Cancer Biology seminar series). The 4+1 students in year 5 will present a 30 minute formal seminar on their MS thesis research during the Elkin Seminar Series as part of the Advanced Graduate Seminar course (CB 790R). At the Elkin Lectures, the students are gaining advanced knowledge in cancer and valuable experience by presenting their research to a professional audience and also learn how external speakers present and answer questions.

Introductory Graduate Seminar (CB570r) in year 5. This is a course that meets 2 hours per week and where students learn to present and critically analyze the scientific literature on cancer. Major learning objectives include how to critically evaluate the literature, research approaches and methods, and the development of oral presentation skills. Evaluation is based on the quality of student presentations and class participation. CB570r can be taken either in the Fall or the Spring semester, depending on selected Elective.

Elective (in year 5). The students can choose an elective course (usually 2-3 credits/course) or take the Cancer Clinical Colloquium (IBS 500R) or the Cancer Pharmacology (CB 761) as an elective.

Course #	Course name	Credits
<u>Year 04-Fall</u>		
<b>Biol 499r*</b>	Research for credit I	
<b>IBS 523</b>	Cancer Biology I	4
<b>CB 790r</b>	Advanced Graduate Seminar	2
<u>Year 04-Spring</u>		
<b>Biol 499r*</b>	Research for credit II	
<b>IBS 524</b>	Cancer Biology II	4

<b>CB 790r</b>	Advanced Graduate Seminar	2
<u>Year 04-Summer</u>		
<b>IBS 599r</b>	Advanced Research (for MS thesis)	6
<u>Year 05-Fall</u>		
	(9 credit hours/semester for full time status)	
<b>CB 570r</b>	Introductory Graduate Seminar	2
<b>IBS 599r</b>	Advanced Research (for MS thesis)	6
<b>CB 790r</b>	Advanced Graduate Seminar	2
<u>Year 05-Spring</u>		
<b>XXX</b>	Elective	2-3
<b>IBS 599r</b>	Advanced Research (for MS thesis)	6
<b>CB 790r</b>	Advanced Graduate Seminar	2
<u>Year 05-June</u>		
	Written MS thesis due; Oral defense of MS thesis (Thesis completed and deposited with LGS by July 15)	
		Total: 38**

Regular examinations assess student learning during these courses; the course directors share grades with the director of graduate studies and the program director following each exam. Any student earning a grade less than a B meets with the director of graduate studies to put remedial solutions in place (for example tutoring by a senior student).

\* credit for Biol 499r goes to the undergraduate degree;

\*\*a minimum of 30 credits are required for a MS degree

### C. Teaching Requirement

There is no teaching requirement of the Laney Graduate School for the 4+1 Master Degree.

### D. Grade criteria and Master's Thesis

Grades in the Laney Graduate School range from A (4.0) to C (2.0) and F (0); there is no D grade. Some courses are taken on a Satisfactory/Unsatisfactory (S/U) basis. Advisors will assign grades in IBS523, IBS524, CB570r, Bio499r (undergraduate research for 4+1), or CB599r (Thesis Research) and are encouraged to use grading that reflects performance and overall progress made each semester. Students must maintain an average of B (3.0) or better in all coursework each semester. Students with a semester GPA below 3.0 will be put on academic probation, and be notified in writing of such by the LGS. Students on academic probation due to their grade point average have one semester to bring their semester grade point average up to 3.0. They will be notified in writing by the Program Director and the DGS and the Executive Committee will be informed. Students must also receive a grade of B- (2.7) or better in each of their required classes. Failed classes can be retaken, except for the laboratory-based research (Bio499r and CB599r); a grade of C or below in a single semester of either of those two classes will lead to dismissal.

GDBBS policy dictates that a grade of U or F in any course, or a semester GPA below 3.0 in any two semesters, will result in dismissal. If a student who is dismissed believes there were extenuating

circumstances that adversely affected his/her performance, he/she may submit to the division Director a written appeal for consideration of reinstatement. The appeal should clearly outline the extenuating circumstances and must be submitted within one month of grades being recorded by the Office of the Registrar. The GDBBS Executive Committee will review all appeals.

*Two assessments of unsatisfactory progress by the student's thesis committee also constitute grounds for termination from the 4+1 Program.*

Requirements for the MS degree include satisfactory completion of all required coursework, completion of a written Master's thesis, and an oral defense of the thesis research. The master's thesis must represent a scholarly body of work indicating a rigorously applied research effort and must minimally describe the significance of the research proposal, the hypotheses being tested, the experimental approach(es) undertaken, any data generated, conclusions drawn, and a proposal for future work. Both the written master's thesis AND its oral defense must be passed by the master's thesis committee before a degree is awarded.

The MS thesis project consists of a 20-month laboratory-based original research experience where the students pursue a scientific hypothesis. The faculty will carefully weigh the scope of the research project so that it is commensurate with the time available for laboratory work by the students. At the end of their research project they will present the results in the format of a written document (MS thesis) that follows the structure of a scientific publication (introduction, methods, results including figures and tables, discussion, references). The experimental data have to be conducted in a rigorous fashion, include all expected controls and be accompanied by clear figure legends. The Results section will clearly describe the findings, whether they support or infirm the hypothesis. The Discussion will provide data interpretation, a comparison with prior findings of the literature and forward-looking statements. The students will also be encouraged to report their scientific results at a conference (oral presentation or poster) and in a scientific publication. The student will receive feedback on the written document from their thesis advisor and then the document delivered to the M.S. thesis committee (advisor and 2 other expert faculty) for final approval and authorization to set a date for an oral defense of the M.S. thesis. The defense will consist of an initial formal oral presentation of the thesis work followed by questioning by the thesis committee. The M.S. thesis committee will administer the defense. The committee will focus their questions on the scientific project carried out in the laboratory as described in the thesis document and related topics. At the end of the defense the examiners will cast their pass/fail votes and the student will pass the defense by majority vote. The students who fail the exam can petition the Executive Committee for a retake exam within 1 month. Failure will lead to dismissal from the M.S. track and those students will be offered a transcript reflecting credit hours and grades on the coursework taken.

Upon completion of all of the requirements, the student must complete a *Report of Completion of Requirements for Master's Degree*, which the members of the dissertation committee must sign indicating their vote. The Program Director or Director of Graduate Studies must also sign this form. An *Application for Degree* form must also be completed and submitted to the GDBBS. These forms are available from the Laney Graduate School, the GDBBS office or the CB web site. Both signed forms must be returned to both the Division Office and the Laney Graduate School.

## **E. Length of Time to Degree**

The MS degree of the 4+1 BS-MS program is awarded in the summer following the end of the academic year 5 (e.g. +1 year), typically in the June-August period, depending on thesis completion.

## **PART VII. OTHER ACTIVITIES**

### **A. Seminars, Journal Clubs, and Symposia**

Seminars hosted by a variety of programs and departments, are given by invited speakers throughout the academic year. Students are encouraged to participate in the scientific discussions and, when possible, arrangements are made for students to meet with guest speakers. In addition to the numerous seminars, other opportunities to participate in scientific discussions include journal clubs, data clubs, and yearly student-organized and run CB and GDBBS symposia. Attendance and participation at the Winship Cancer Institute Scientific Symposium is mandatory for all CB students and attendance at the annual GDBBS symposium is very strongly encouraged. These activities are not eligible for formal credit, but add to a well-rounded graduate education and should be viewed as an opportunity to learn about work in other fields.

### **B. Regional and National Scientific Meetings**

Students are encouraged to present their research at regional and national scientific meetings. Some travel money is available for students making presentations at open meetings. These travel awards are given no more than once per student per year (September 1 – August 31). Applications for support should be made to the Graduate Student Council, the Division and the Program. Forms are available on the CB web site.

### **C. Vacation and Leave**

The course of study and graduate student stipend are based on a 12-month commitment. It is expected that students will take no more than two weeks of vacation, in addition to University holidays each year. Note that breaks in course work (Fall or Spring break, Christmas/New Year's - beyond the official university holiday days, and summers) are **not** holidays for graduate students. First-year students are required to schedule in advance any planned absences with the DGS and the faculty member in whose lab they are working. Unscheduled absences or excessive vacation time will result in a stipend reduction and/or possible suspension from the Program.

### **D. Parental Accommodation Policy**

This policy is for students with substantial parenting responsibility as a result of childbirth, care of newborn, or a newly adopted child. This policy guarantees PhD students a minimum level of accommodation during the transition to parenthood. The caregiver designated as having substantial parental responsibility may be relieved of full-time graduate duties and responsibilities for up to eight weeks after the birth or adoption of a child. Up to four of those weeks may be situated before the anticipated birth or adoption date. Form and instructions for Parental Accommodation Request is on the Laney Graduate School website.

### **E. Other program activities**

The students in the graduate program in CB are an integral and vital part of the CB community. As such, they are encouraged to participate in diverse activities such as help with the annual new student recruitment process, participate in the program annual retreat and other social events that build community and create professional networking.