



NC STATE UNIVERSITY
Genomic Sciences Graduate Program

STUDENT HANDBOOK

2019- 2020

A description of program requirements, policies, procedures, and documents pertaining to the graduate programs of Genomic Sciences

Last Update:
June 2018



Welcome and Introduction

The Genomic Sciences Graduate Student Handbook is designed to introduce new graduate students to our degree programs, and to provide a reference for programmatic and University procedures and regulations throughout a student's graduate program. In addition, we address some of the unique challenges and opportunities that a university-wide graduate program can offer to both students and mentors.

This handbook is formatted as a chronological guide through a graduate program and covers all aspects of the Genomic Sciences Graduate Programs. We hope that you will consult sections of this handbook as needed throughout your time here, but many resources can also be found on our website (<http://brc.ncsu.edu/genomics/>) or on the Graduate School's website (<http://www.ncsu.edu/grad>).

With great gratitude we thank those who made this handbook possible. It is with the aid and material from other departments at NC State and the valued suggestions from previous students that have helped make this handbook a trusted guide. The handbook is always a work in progress. We hope that you will provide feedback and suggestions to ensure that this resource continues to offer current and helpful information for future graduate students.

TABLE OF CONTENTS

I.	ADMINISTRATIVE PERSONNEL	4
II.	ABOUT THE PROGRAM	5
III.	BEFORE YOU START	6-10
IV.	STEPS TO GRADUATION	11
V.	DEGREE PROGRESSION	12-34
VI.	PREPARING FOR GRADUATION	35-36
VII.	PROGRAMMATIC REGULATIONS & REQUIREMENTS	37
VIII.	GENOMIC SCIENCES COURSE REQUIREMENTS	38-41
IX.	OTHER RECOMMENDATIONS	42
X.	UNIVERSITY REGULATIONS & REQUIREMENTS	43-46
XI.	APPENDIX	47
	a. APPENDIX A	48
	b. APPENDIX B	49
	c. APPENDIX C	50
	d. APPENDIX D	51

I. ADMINISTRATIVE PERSONNEL

Co-Director of Graduate Program (Bioinformatics)

Spencer Muse, Ph.D.

Professor, Department of Statistics

College of Sciences

Campus Box 7566

muse@stat.ncsu.edu, 919-515-1948

Co-Director of Graduate Program (Functional Genomics)

David Bird, Ph.D.

Professor, Department of Plant Pathology

College of Agricultural and Life Sciences

Campus Box 7566

bird@ncsu.edu, 919-515-1967

Graduate Program Coordinator, Genomic Sciences Graduate Program

Dana Ripperton

Bioinformatics Research Center

Campus Box 7566

dgripper@ncsu.edu, 919-513-3551

II. ABOUT THE PROGRAM

1. HISTORY

The Genomic Sciences graduate program at North Carolina State University was initiated in fall 1999. The program offers degrees in Bioinformatics and Functional Genomics, and includes a university-wide group of diverse faculty, staff and students, spanning over twenty-five departments in six different colleges. The interdisciplinary nature of this program introduces several unique features that set our program apart from traditional department-based programs.

2. GENOMIC SCIENCES

Genomic Sciences students pursue a degree in a university-wide program, not a “department.” Genomic Sciences students initially interact with either the Director for Bioinformatics or the Director for Functional Genomics. These faculty help choose first-semester courses and guide the student until he or she has chosen a Major Advisor. At that time, the Major Advisor’s department becomes the student’s home department. The student, however, is still subject only to the academic requirements of the Genomic Sciences degree program, *not* the academic requirements of the home department’s degree program.

Genomic Sciences students choose their Major Advisor from a group of more than 100 faculty spanning twenty-five departments (<http://brc.ncsu.edu/genomics/people/faculty>). It is the responsibility of each student to learn about the research interests of the faculty, as a first step in choosing a Major Advisor. As detailed later in this handbook, students should make appointments with faculty to discuss their research programs, and identify a subset that interests them.

Regardless of the degree goal, all Genomic Sciences students take a common core of classes. This provides a foundation for later classes, but also serves to encourage interactions between Bioinformatics and Functional Genomics students. Your graduate student community is more diverse than most on campus because it includes two different disciplines. Use this to your advantage!

3. GRADUATE PROGRAMS

- Functional Genomics students will rotate through several research laboratories at the beginning of their program to identify a Major Advisor.
- Bioinformatics students will have extensive discussions with faculty (although laboratory rotations are certainly welcome).
- All Ph.D. students should select a Major Advisor by the end of the second semester.
- The Co-Directors of the Genomic Sciences Graduate Program will serve as a general resource throughout the student’s graduate program.

Please check our Genomic Sciences graduate program homepage for resources, events, and other relevant changing information: <http://brc.ncsu.edu/genomics/>. Finally, the Graduate School has provided an OUTSTANDING web site for new graduate student survival at NC State University and in Raleigh. Please explore: <http://www.ncsu.edu/grad/current-students/survival-guide.html>

III. BEFORE YOU START

1. ESTABLISHING NORTH CAROLINA RESIDENCY FOR US CITIZENS

For tuition purposes, all US citizens are expected to establish North Carolina residency within the first year of residence in the state. It is very important that you complete the necessary steps to become a resident within the first 10 days of living in North Carolina. These steps are outlined in detail on the Graduate School website: <http://www.ncsu.edu/grad/tuition-residency>. *Failure to establish North Carolina residency within the first year will lead to hefty out-of-state tuition charges in the second year for which the student is responsible.*

2. GETTING PAID

The procedure for getting paid depends on the source of your support. You must see the appropriate personnel (see below) as soon as you arrive to sign the appropriate appointment and tax forms, if applicable. Your first check may not arrive until the end of your first full month at NCSU, so plan accordingly!

If you are receiving state funds through the University as a Genomic Sciences Fellow, your paperwork will be handled by Mr. Todd Marcks, Fellowship & Grants Administrator, in the Graduate School (919-515-1481). All graduate students are paid monthly via mandatory direct deposit.

For all other support, please see Dana Ripperton (Bioinformatics Research Center, Ricks Hall, Room 304; 919-513-3551) to sign the appropriate paperwork as needed. Graduate students are paid either bi-weekly or monthly via mandatory direct deposit. You can view your paycheck online via MyPack Portal under the “For Faculty and Staff” tab: click on “Payroll & Compensation” and then “View Paycheck.”

3. TAXES

Although taxes may not be deducted from your fellowship/traineeship check each pay period, all or part of your award may be taxable. It is your responsibility to make arrangements to pay your taxes. You will not receive a W-2 form for your Fellowship stipend; however, the IRS is apprised of your award. Since Graduate School personnel and other University personnel are not tax experts, please call the IRS for tax questions. <http://www.IRS.gov>

4. INTERNATIONAL TAXATION

Every incoming international student must check in with Michelle Anderson (919-515-4370, michelle_anderson@ncsu.edu). Please make an appointment with her during your first week here. Also, look out for days that the Social Security Office will be on campus to distribute numbers for international students. *Failure to obtain a SSN or meet with Michelle Anderson may mean your paychecks will be held.*

5. TUITION

You can learn more about tuition information and due dates at <http://www.fis.ncsu.edu/cashier/students/gradstudents.asp>. Tuition is due before the beginning of each semester; the date is always posted on the website. Also, students must send payment for their fees and any previous outstanding balance to the address indicated. Failure to do this will result in the student's schedule being canceled. You may view your bill electronically through MyPack Portal (“For Students” tab, select “Account Summary” in the “Finances”/“Cashier’s Office” block).

See page 44 for information on GSSP

6. **TUITION REMISSION**

If you are an out-of-state student, you may be eligible for tuition remission. Tuition remission is the extra expense of out-of-state tuition added to traditional in-state tuition. Tuition remission eligibility is subject to your qualification of Graduate Student Support Plan (GSSP),

<http://www.ncsu.edu/grad/support-plan/docs/gssphdbk.pdf>. If you are a US citizen or permanent resident and are awarded tuition remission, it will only be awarded for ONE year.

Attaining North Carolina residency is important since you will not be eligible to receive tuition remission after the first year. Guidelines for establishing residency are in Appendix A and

<http://www.ncsu.edu/grad/tuition-residency>. International students cannot attain residency, and continue to be eligible for tuition remission after the first year.

7. **MYPACK PORTAL**

MyPack Portal is a great resource to keep up with your academic career. Here you will be able to edit privacy settings, register for class, register for graduation, create a plan or work, view student financial accounts, view transcripts, and more.

The Student Center found in MyPack Portal (Main Menu >> Student Self Services >> Student Center) shows a breakdown of your academic career here at NC State. Here you will be able to see your schedule, what requirements you have left to fulfill you degree, any holds you may have on your account, list of your adviser committee, transcripts, and anything else you may want to know about your academic status. The department also uses this page to keep up with students viewing the same information as the students.

8. **REGISTRATION FOR CLASSES**

In order to register for courses, you must access MyPack Portal on the web. Detailed instructions on how to enroll can be found at: <http://registrar.ncsu.edu/academic-resources/courses>. You can access the NCSU course catalog through MyPack Portal or at:

<https://www.acs.ncsu.edu/php/coursecat/directory.php>.

The Director for Bioinformatics and the Director for Functional Genomics will advise you on appropriate course registration for your first and second semesters in the Genomic Sciences program. Your Committee Chair/Major Advisor, Advisory Committee and research project will determine subsequent coursework.

Registration advising occurs twice a year: once for summer sessions and fall semester registration, and once again for spring semester registration. The Graduate Program Coordinator will lift your Registration Advising Hold only **after you have been advised and have filed a Semester Activity Report**.

Once your hold has been lifted, you may then register for classes. Prior to this, you may only add classes to your “Wish List.” *Please keep in mind that the Genomic Sciences Graduate Program does not pay late registration fees; therefore, it is important that you register before the late registration deadline for each semester.* If you are not sure if you have an advising hold on your account visit, MyPack Portal >> Main Menu >> Student Self Service >> Student Center. Any holds will be listed on the right side of the page.

Please see pages 38-41 for information on Genomic Sciences course requirements and page 43-47 for information on University registration requirements.

Genomic Sciences Graduate Programs
Ricks Hall

(W): <http://brc.ncsu.edu/genomics/>

(P): 919.515.2535

(F):919.515.7315

9. **NCSU COMPUTER (UNITY) ACCOUNT**

Each person affiliated with NC State University is assigned a Unity account, along with a Unity ID and password. Using your Unity ID together with your password, you can access your campus-based email, access the MyPack Portal system, manage files in your personal AFS file space, use campus wireless internet and much more. Your Unity ID is established using the first letter of your first and middle names and the first six letters of your last name. Your initial (default) 8-digit password is the last four digits of your Campus ID number (this is found following the letters "NCSU" on your All Campus Card) plus the four digits of your birth month and day. If you need help accessing your Unity account, please contact the NC State Help Desk (919-515-HELP or 919-515-4357).

For more detailed information regarding your Unity ID and account, please see

<http://oit.ncsu.edu/n/welcome-ids-accounts>.

10. **WOLFPACK ONE CARD**

Permanent photo identification cards are required for all personnel on campus. These "One Cards" entitle students to the following: use of the library, intercollegiate athletic events, membership in the University Student Center, use of Student Health Services (infirmary), use of NCSU Bookstores and other University facilities, services and programs supported by required fees. The All-Campus Network Office is located in the Talley Student Center. The hours of operation are Monday-Friday from 8:00am to 5:00pm. There are additional evening and weekend hours at the beginning of each academic period. Additional information can be found at: <http://onecard.ncsu.edu>.

11. **NCSU GOOGLE**

NC State uses Google email, Gmail, and applications. You may access these at <http://google.ncsu.edu>. To access you email, select the Gmail button on the left side of the screen and use your Unity ID and password to login. Through your email and from the NCSU Google page, you have access to a personal Google Calendar, which allows you to keep up with appointments and schedules. You may make multiple calendars and share it with peers and co-workers that you approve. Google Docs also allows you have personal documents that you alone can see and edit or share documents between those whom you have approved. Any questions about this or the other applications offered by NCSU Google, please see the website or contact the NC State Help Desk (919-515-HELP or 919-515-4357).

12. **PARKING**

University parking areas are zoned, reserved or restricted. All vehicles parked in zone areas on campus must have an appropriate permit displayed and must be parked in a space marked for parking. Students who desire parking permits can purchase them from the Transportation Department's website, <http://www2.acs.ncsu.edu/trans>. Permits are issued on a first come first served basis. Permits go on sale during the summer.

13. **PUBLIC TRANSPORTATION**

The Wolfline is a University run bus system that is free for anyone to use. Buses and hours vary depending on University schedule. You may check schedules on the Transportation Website: <http://ncsu.transloc.com>. The CAT bus (<http://www.raleighnc.gov/transit>) and Triangle Transit (<http://www.triangletransit.org>) are two city buses available for use as well. Students may get a GoPass for riding the city busses through the Transportation office, <http://www2.acs.ncsu.edu/trans/wolftrails/bus.html#gopass>

14. MAIL

Initially, your mail and any University correspondence will be delivered to the Genomic Sciences Graduate Program (Bioinformatics Research Center), Campus Box 7566. After you have chosen your Committee Chair/Major Advisor, you will receive your mail and University correspondence through your new department. Please remember to notify the Administrative Assistant of your new mail box number so that your mail can be forwarded to the correct address.

Correspondences for the BRC can be addressed to:	
<u>U.S. Mail</u>	<u>Campus Mail</u>
Name	Name
NC State University	Genomic Sciences Graduate Program
Genomic Sciences Graduate Program	Campus Box 7566
Campus Box 7566	
Raleigh, NC 27695-7566	

15. SAFETY

Each graduate student is expected to complete the Manager's Safety Orientation Checklist at: <http://www.ncsu.edu/ehs/2010/managercklst.html>.

Wolf Alert is how the University communicates emergencies to students via text message, email, campus wide loud systems, and the University website. Please look over the Wolf Alert Website for more information about how you can learn about activities on campus, http://www.ncsu.edu/ehs/campus_alert.htm.

16. TRANSCRIPTS FROM PREVIOUS INSTITUTIONS

The Graduate School must have an official copy of each student's final transcript from previous institutions stating the degree earned and the date the degree was conferred if it was not included with your original application materials. The Graduate School also needs official transcripts of any and all coursework completed *after* the degree was conferred but before acceptance into Graduate School (if applicable) in addition to any coursework mentioned on the application.

*****If you have just finished a degree program or have finished any coursework that would not have been sent with your original application materials, please order your official transcripts and have them sent directly to the Graduate Program Coordinator (NC State University, Campus Box 7566, Raleigh, NC, 27695-7566). Please indicate that these are your "final" transcripts. A copy will be kept in your program file, and the original will be sent to the Graduate School. *If the Graduate School does not have an official copy of these final transcripts, they will not process any paperwork for your graduate degree program.* *****

17. UNIVERSITY GRADUATE STUDENT ASSOCIATION

The University Graduate Student Association (UGSA) is a campus-wide organization of graduate students that deals with matters pertaining to graduate life. The UGSA also administers travel funds that will reimburse students who have presented their work at a meeting for a portion of their travel expenses (depending on the availability of funds). Departments that have UGSA Chapters also get a nominal rebate of funds each semester to use as the Chapter sees fit. The UGSA sponsors several social events ("breathers") throughout the year to promote the interaction of graduate students from the various departments and programs. <http://ugsa.ncsu.edu>.

18. GENOMIC SCIENCES GRADUATE STUDENT ASSOCIATIONS

The Bioinformatics chapter and the Functional Genomics chapters of the University Graduate Student Association are up and running due to the hard work of your graduate student colleagues. These chapters disseminate information of interest and importance to members, provide a forum for discussion and decision, and represent the graduate students of this program to the faculty in matters that may affect the welfare of the graduate students. The chapters annually elect Genomic Sciences graduate students to represent them at the monthly campus-wide GSA meetings.

19. GENOMIC SCIENCES FACULTY MEMBERS

Please see our website (<http://brc.ncsu.edu/genomics/people/faculty>) for a full list of faculty members and their information.

IV. STEPS TO GRADUATION

STEP	TASK	COMPLETED
Step 1	All students are to contact either the Director for Bioinformatics or the Director for Functional Genomics to select courses for the first semester.	<input type="checkbox"/>
Step 2	Make sure that everything is completed from the beginning of the handbook, pages 5-10.	<input type="checkbox"/>
Step 3	Complete rotations (Functional Genomics Only) and identify advisors. All students should have determined an advisor by the end of their second semester.	<input type="checkbox"/>
Step 4	Create a committee.	<input type="checkbox"/>
Step 5	Create and submit a Plan of Work through the department and then in MyPack Portal.	<input type="checkbox"/>
Step 6	Schedule exams.	<input type="checkbox"/>
Step 7	(Thesis Students Only) Complete defense and turn in Electronic Thesis.	<input type="checkbox"/>
Step 8	Apply for graduation	<input type="checkbox"/>

The Genomic Sciences graduate program offers five different degrees: MR or Ph.D. in Bioinformatics, and MR, M.S. or Ph.D. in Functional Genomics. Please make sure that you refer to the appropriate section!

V. DEGREE PROGRESSION

Below are the simplified, chart versions for what needs to be done each semester during all degree programs. For more details instructions, broken down by Degree and Program, please see pages 14-34.

FIRST SEMESTER

WHEN	WHAT	PROGRAM
During 1 st semester	Laboratory Rotations	M.S. Functional Genomics Ph.D. Functional Genomics
Before choosing a Major Advisor	Discussion with Potential Advisors	Ph.D. Bioinformatics
Once Laboratory Rotations are completed	Selection of a Major Advisor	M.S. Functional Genomics

SECOND SEMESTER

WHEN	WHAT	PROGRAM
Before the end of the 2 nd semester	Selection of a Major Advisor	Ph.D. Bioinformatics Ph.D. Functional Genomics
After Major Advisor is selected	Initiation of the Research Program	MS. Functional Genomics Ph.D. Functional Genomics Ph.D. Bioinformatics
After Major Advisor is selected and Research Program is Initiated	Selection of a Graduate Advisory Committee	MR Functional Genomics MR Bioinformatics M.S. Functional Genomics Ph.D. Functional Genomics Ph.D. Bioinformatics
Before the end of the 2 nd semester	Initial Meeting with Graduate Advisory Committee	M.S. Functional Genomics Ph.D. Functional Genomics
Before the end of the 2 nd semester	Completing Online 'Plan of Work'	MR Functional Genomics MR Bioinformatics M.S. Functional Genomics Ph.D. Functional Genomics

THIRD SEMESTER

WHEN	WHAT	PROGRAM
Before the end of the 3 rd semester	Initial Meeting with Graduate Advisory Committee	Ph.D. Bioinformatics
Before the end of the 3 rd semester	Completing Online 'Plan of Work'	Ph.D. Bioinformatics

SECOND AND THIRD YEARS

WHEN	WHAT	PROGRAM
Once per academic year	Graduate Advisory Committee Meetings	M.S. Functional Genomics Ph.D. Functional Genomics Ph.D. Bioinformatics
After first year	Teaching Requirements <i>(there is no specific requirement, but all students are encouraged to take advantage of this opportunity)</i>	M.S. Functional Genomics Ph.D. Functional Genomics Ph.D. Bioinformatics
Before the end of the 3 rd year	Preliminary Written Examination *MUST BE COMPLETED BEFORE ORAL EXAMS CAN BE SCHEDULED*	Ph.D. Functional Genomics Ph.D. Bioinformatics
Before the end of the 3 rd year	Preliminary Oral Examination	Ph.D. Functional Genomics Ph.D. Bioinformatics

LAST YEAR OF STUDY

WHEN	WHAT	PROGRAM
Last year of study	Final Advisory Committee Meeting	M.S. Functional Genomics Ph.D. Functional Genomics Ph.D. Bioinformatics
Last year of study	Preparation of Thesis or Dissertation	M.S. Functional Genomics Ph.D. Functional Genomics Ph.D. Bioinformatics
Last year of study	Thesis/Dissertation Seminar	MR Functional Genomics MR Bioinformatics M.S. Functional Genomics Ph.D. Functional Genomics Ph.D. Bioinformatics
Last year of study	Final Oral Examination	MR Functional Genomics MR Bioinformatics M.S. Functional Genomics Ph.D. Functional Genomics Ph.D. Bioinformatics

BIOINFORMATICS

MASTER'S (MR) - BIOINFORMATICS

The Masters of Bioinformatics degree is non-thesis, and require only coursework and a final oral exam.

1. SELECTION OF AN ADVISORY COMMITTEE-----SECOND SEMESTER

Soon after selecting a Committee Chair/Major Graduate Advisor, the student, in conjunction with the Chair, will select a Graduate Advisory Committee. The functions of this committee are to direct the student's coursework, provide advice and expertise with regard to their research program, give the preliminary and defense examinations and evaluate and critique the thesis or dissertation. Students should seek committee members who will actively participate in the student's training and who provide balance in terms of expertise.

MR candidates, the committee must be comprised of at least **three** NC State University Graduate faculty:

- One Functional Genomics faculty member
- One Bioinformatics faculty member
- One other faculty member (who does not need to be a member of the Genomic Sciences faculty).

Once the student and advisor have settled on a list of potential committee members, the student asks the faculty member if they are willing to serve on their Advisory Committee and gives a general outline of the research program. Most faculty members who are asked will willingly serve on student committees. In some cases, a faculty member may decline if they feel they are over-committed or do not really have the expertise to benefit the student.

Once the appropriate number of committee members has agreed to serve, the committee members are submitted by the student for approval by the Director of Graduate Programs. ***The Advisory Committee must be formed and approved by the relevant Director of Graduate Programs no later than the third semester of study.***

2. COMPLETING A PLAN OF WORK-----BEFORE END OF SECOND SEMESTER

All graduate students are required to submit an **online** Graduate Plan of Work (POW). Students must meet with their advisor and create their POW. The student must then enter their Plan of Work and Advisory Committee online via Student Self Service in MyPack Portal. The plan of work and advisory committee are designed as advising tools. You may begin working on your plan of work and advisory committee as soon as you matriculate and become active in the graduate career. You may also save in-progress work and submit it at a later date. You may make changes at any time up until submission. For detailed instructions, refer to the SIS Training and Operations Manual, <http://www.ncsu.edu/grad/faculty-and-staff/docs/GRAD-SIS-training-manual-students.pdf>.

For Bioinformatics MR candidates, the Plan of Work must be submitted and approved by the Director of Graduate Programs before the end of the second semester of study.

Changes in Advisory Committee or Plan of Work: If one or more of your committee members retires or leaves the University, you may request a change in your committee. If one or more committee members are on sabbatical, you may request a substitute for the missing members for a particular examination, but this should be done in a timely manner. In other words, monitor your committee and Plan of Work and as soon as you detect a problem, make arrangements to correct it immediately.

If there are any discrepancies or information changes in your program, such as dropping or substituting courses or committee members, please be aware that this will cause a delay in scheduling examinations. The previous information must be changed and/or corrected and then *resubmitted* to the Graduate School for approval, which takes time. Keep ahead of the program by requesting any changes in writing (see the Graduate Program Coordinator for the proper forms) as soon as you are aware of them! Also, please keep in mind that you cannot make any changes to your Plan of Work during your final semester of study.

3. **FINAL ORAL EXAMINATION**-----**LAST YEAR OF STUDY**

The student must pass an oral examination administered by the Graduate Advisory Committee at the end of the degree program. The emphasis of the examination will be a synthesis of course work rather than research. *This exam must be passed before a deadline specific to each semester in order to graduate that semester.* Check the NCSU Graduate School web page (<http://www.ncsu.edu/grad/etd/deadlines.html>) to determine the actual deadline. There will be no exceptions, and tuition must be paid the following semester if graduation is postponed to that semester.

The MR student's Request to Schedule the Final Oral Examination form must be received by the Graduate Program Coordinator *three weeks* prior to the proposed examination date. The Graduate Program Coordinator will then forward the request to the appropriate Director for approval. After the Director approves the request, the Graduate Program Coordinator will then forward the completed, signed form to the Graduate School for final approval. The student is responsible for arranging the date and time with his/her committee and reserving the examination room.

Ph.D. - BIOINFORMATICS

1. DISCUSSIONS WITH POTENTIAL ADVISORS-----FIRST SEMESTER

All new Bioinformatics Ph.D. graduate students must have extensive discussions with Bioinformatics faculty before choosing a Committee Chair/Major Advisor. The discussions allow the students to gain first-hand information on specific programs in which they are interested and allow the faculty and students to assess compatibility. These discussions will likely involve several successive meetings with the same faculty member, in order for the student to read suggested material and continue more in-depth discussions. These meetings should take place over the course of the first two semesters in order to select a Committee Chair/Major Advisor by the end of the second semester.

Although the Director for Bioinformatics can make suggestions for possible faculty visits, new students are responsible for setting up these discussions. The first step is to narrow down potential research programs based on faculty research descriptions and faculty interest in new students. Students should meet with as many Bioinformatics faculty as possible, in order to have a wide selection of possible advisors.

2. SELECTION OF A MAJOR ADVISOR-----SECOND SEMESTER

All students in graduate programs must have a Committee Chair/Major Graduate Advisor who is a member of the Genomic Science Graduate Faculty (see the Genomic Sciences website for a complete list of this). *This MUST be completed no later than the end of the second semester.*

Once discussions with faculty are completed, the student selects a Committee Chair/Major Graduate Advisor. This important decision should be made with considerable thought and information, ***and must be discussed with the Director for Bioinformatics before a final decision is made.*** A number of tips for selecting advisors has been compiled by previous graduate students and is listed in Appendix C. Following discussions, students often have a clear idea of which faculty member they would like to have as an advisor, while in other cases, students are enthusiastic about more than one possible advisor. In the latter situation, it is advisable to revisit the faculty to discuss potential graduate programs in more detail.

Once a student settles on an advisor, the student should set up a meeting with the faculty member and indicate an interest in working with that person. At that time the faculty member will accept or decline the student as an advisee. Although it is rare, a faculty member may decline to accept a student because they are concerned about funding, have accepted other new students or feel that the student does not fit into their program.

3. INITIATION OF THE RESEARCH PROGRAM-----SECOND SEMESTER

All candidates for degrees are required to conduct a program of original research. Once the advisor is selected, the student and advisor select the research topic. The research program should initiate in the second semester and continue throughout the degree program. It is expected that this work should make an original contribution to scientific knowledge and it is expected that student thesis research will be accepted for publication in high caliber professional journals. The research constitutes a vital aspect of graduate student training, and successful completion of the graduate program will be measured largely by the quality of this research.

4. SELECTION OF AN ADVISORY COMMITTEE-----**SECOND SEMESTER**

Soon after selecting a Committee Chair/Major Graduate Advisor, the student, in conjunction with the Chair, will select a Graduate Advisory Committee. The functions of this committee are to direct the student's coursework, provide advice and expertise with regard to their research program, give the preliminary and defense examinations and evaluate and critique the thesis or dissertation. Students should seek committee members who will actively participate in the student's training and who provide balance in terms of expertise.

For Ph.D. candidates, the committee must be comprised of at least **four** NC State University Graduate faculty:

- One Functional Genomics faculty member
- One Bioinformatics faculty member
- Two other faculty members (who do not need to be members of the Genomic Sciences faculty).

If the student has elected to minor in a discipline, one of the Graduate Advisory Committee members must represent that Minor.

Once the student and advisor have settled on a list of potential committee members, the student asks the faculty member if they are willing to serve on their Advisory Committee and gives a general outline of the research program. Most faculty members who are asked will willingly serve on student committees. In some cases, a faculty member may decline if they feel they are over-committed or do not really have the expertise to benefit the student.

Once the appropriate number of committee members has agreed to serve, the committee members are submitted by the student for approval by the Director of Graduate Programs. ***The Advisory Committee must be formed and approved by the relevant Director of Graduate Programs no later than the third semester of study.***

Graduate School and Outside Committee Representatives: A Graduate School Representative (GSR) or Outside Representative is required on all PhD committees. This person can be anyone on your committee who is not a chair or part of your degree program. If no one on your committee agrees to this roll, an extra committee member will be assigned to your committee. This person's job is to ensure that your exams are given fairly and without bias.

Members of the Graduate Faculty from non NCSU campuses: Graduate faculty from UNC-Chapel Hill, UNC-Charlotte, UNC-Greensboro, and Duke University may serve as one of the required *members* (they cannot serve as Chair) of the Graduate Advisory Committee when appropriate by submitting a Graduate Advisory Committee Appointment Form for Inter-Institutional Member. The professor must be a member of the Graduate Faculty of the University in question.

A faculty member from another university (who is not an Inter-institutional Graduate Faculty member), or a professional from industry or government with credentials comparable to those required for membership on the Graduate Faculty, may serve as an External Member *in addition* to the number of committee members normally required. External Members will have full voting privileges and are expected to participate in the student's preliminary and final examinations. They will also be consulted in the development of the student's Plan of Work and will sign the thesis or dissertation. Please see our Graduate Program Coordinator for the required form to appoint someone as an External Member.

If there must be a change in the committee, the change must be requested in writing and be approved by the relevant Director of Graduate Programs and the Graduate School. Please see our Graduate Program Coordinator for the required form to change a member of the Graduate Advisory Committee.

5. INITIAL MEETING WITH ADVISORY COMMITTEE-----THIRD SEMESTER

The first meeting between the Advisory Committee and student should occur by the end of the third semester of study. Students are required to submit a short research plan to their committee before this meeting. The plan should cover background information, rationale for the project and a brief outline of the initial experiments. The plan should then be presented orally at the first meeting and forms the basis of discussion on the research plan as well as guide decisions on courses for the Plan of Work.

6. COMPLETING A PLAN OF WORK-----BEFORE END OF SECOND SEMESTER

All graduate students are required to submit an **online** Graduate Plan of Work (POW). Students must meet with their advisor and create their POW. The student must then enter their Plan of Work and Advisory Committee online via Student Self Service in MyPack Portal. The plan of work and advisory committee are designed as advising tools. You may begin working on your plan of work and advisory committee as soon as you matriculate and become active in the graduate career. You may also save in-progress work and submit it at a later date. You may make changes at any time up until submission. For detailed instructions, refer to the SIS Training and Operations Manual, <http://www.ncsu.edu/grad/faculty-and-staff/docs/GRAD-SIS-training-manual-students.pdf>.

For Bioinformatics Ph.D. candidates, the Plan of Work must be submitted and approved by the Director of Graduate Programs before the end of the third semester of study.

Note for Ph.D. students with M.S. degrees: For a student who has a Master's degree, a maximum of 18 hours of relevant graduate credit may be applied toward the credit hour requirements upon recommendation of the Graduate Advisory Committee. If a student completes a Master's degree at NCSU and continues for a doctoral degree *without a break in registration*, up to 36 credit hours taken while in master's status may be used to meet minimum requirements for the doctoral degree.

Changes in Advisory Committee or Plan of Work: If one or more of your committee members retires or leaves the university, you may request a change in your committee. If one or more committee members are on sabbatical, you may request a substitute for the missing members for a particular examination, but this should be done in a timely manner. In other words, monitor your committee and Plan of Work and as soon as you detect a problem, make arrangements to correct it immediately.

If there are any discrepancies or information changes in your program, such as dropping or substituting courses or committee members, please be aware that this will cause a delay in scheduling examinations. The previous information must be changed and/or corrected and then *resubmitted* to the Graduate School for approval, which takes time. Keep ahead of the program by requesting any changes in writing (see the Graduate Program Coordinator for the proper forms) as soon as you are aware of them! Also, please keep in mind that you cannot make any changes to your Plan of Work during your final semester of study.

7. ADVISORY COMMITTEE MEETINGS-----ONCE PER YEAR

The Graduate Advisory Committee must meet a minimum of once per academic year to evaluate student progress. Progress reports after each meeting should be filed with the relevant Director of Graduate Program.

8. TEACHING REQUIREMENT-----AFTER FIRST YEAR

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Ricks Hall

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(F):919.515.7315

There is no specific teaching requirement for the Genomic Sciences degree programs. Genomic Sciences graduate students are encouraged, however, to take advantage of teaching opportunities in their home department or as part of the Preparing Future Leaders program (<http://www.ncsu.edu/grad/preparing-future-leaders/index.php>).

9. **PRELIMINARY EXAMINATIONS----- BEFORE END OF THIRD YEAR**

Ph.D. students are required to take both written and oral preliminary examinations. Both written and oral examinations must be completed by the end of the third year of the student's doctoral program. The student, together with the Advisory Committee, chooses the format and details for the examinations. Two possible formats are indicated below, but other formats followed by NC State University departments are acceptable as well. *Forms must be filled out and submitted to the Graduate School at least three weeks prior to scheduling the preliminary oral examination.*

Examination Format 1:

- The written examination consists of a grant proposal written on a topic that is not directly on the students' dissertation research. The proposal should be in a widely used format relevant to the topic (e.g., NIH, NSF, DOE, USDA), excluding sections on budget and personnel. The Advisory Committee must approve the proposal topic before the student begins writing to assure that the topic is acceptable and sufficiently different from the dissertation research. The student then submits a one-page pre-proposed document to the committee for approval. Once the Specific Aims are approved, the student is given a finite time (usually two to three weeks) to complete the proposal.
- The oral examination for Format 1 consists of an oral defense of the research proposal. The examination focuses on the proposal, but all facets of *either* Bioinformatics *or* Functional Genomics may be examined.

Examination Format 2:

- The written examination consists of questions from members of the Advisory Committee. The format may vary among committee members and may take the form of closed or open book questions or short papers on a topic. Students receive one question at a time and are given a finite time to complete the assignment (usually one to several days).
- The oral examination for Format 2 consists of questions from the Advisory Committee. These usually begin with topics from the written examination, but all facets of *either* Bioinformatics *or* Functional Genomics may be examined.

For both formats, a unanimous favorable vote from the committee is necessary to pass the written examination. Approval may be conditional upon the student taking additional work in a specific area. The committee must make clear how any conditions will be met by the student.

After the satisfactory completion of the written comprehensive examination (including the completion of any conditions set for approval) the student may then request to schedule the Preliminary Oral Examination. This is scheduled through the Graduate School after notification from the Advisory Committee that the student has passed the written exam. The Genomic Sciences Graduate Program requires that the completed form entitled "Request for Approval to Schedule Doctoral Oral Examination" be submitted to the Graduate Program Coordinator *three weeks* prior to the date of the proposed exam. The Graduate Program Coordinator will then forward the request to the appropriate Director of Graduate Program for approval. After the Director approves the request, the Graduate Program Coordinator will

then forward the completed signed form to the Graduate School for final approval. These details and time lines are important and must be adhered to.

The purpose of the oral examination is to demonstrate a thorough working knowledge of Bioinformatics or Functional Genomics, the ability to apply this knowledge, and the ability to use the scientific method in solving problems. As in the case of the written examination, a unanimous favorable vote from the Advisory Committee is required to pass this examination, and approval may be conditional upon additional work in a specific area. If the student does not pass the oral examination, the Advisory Committee may recommend a re-examination. At least one semester must elapse before re-examination, and only one re-examination is allowed.

Students with co-majors or taking minors in other disciplines will need to meet the preliminary exam requirements for those programs as well.

10. **FINAL ADVISORY COMMITTEE MEETING-----LAST YEAR OF STUDY**

The student must meet with the Advisory Committee six to nine months before the expected graduation date to allow the committee to evaluate the research and to approve the final research plan and tentative graduation date.

11. **PREPARATION OF THESIS OR DISSERTATION----- LAST YEAR OF STUDY**

Upon completion of the research program, the results of this research are presented to the student's Committee Chair/Major Graduate Advisor and Advisory Committee in the form of a thesis (M.S.) or dissertation (Ph.D.). Students should consult the following website (<http://www.ncsu.edu/grad/etd/index.php>) for important information regarding the preparation of theses and dissertations. Students are also required to attend an Electronic Theses and Dissertations (ETD) Workshop; these are held by the Graduate School throughout the year.

The Committee Chair/Major Graduate Advisor must approve the thesis or dissertation before it is submitted to the Advisory Committee for review. It is the responsibility of both the student and Committee Chair/Major Graduate Advisor to ensure that the material is in final form and of high quality before review by the committee. *The Advisory Committee is responsible for reviewing the scientific merit of the work and should be given at least two weeks (preferably more) before the final oral examination date to accomplish this.*

12. **THESIS/DISSERTATION SEMINAR----- LAST YEAR OF STUDY**

All students are required to present a formal departmental seminar describing their graduate research project (rationale, methods, data, and conclusions). This seminar is generally presented during the final semester of candidacy, frequently immediately prior to the Final Oral Examination

13. **FINAL ORAL EXAMINATION----- LAST YEAR OF STUDY**

The oral defense of the dissertation is the third and final examination for Ph.D. students. This occurs in the final semester of graduate study after completion of the dissertation. In this examination, the student will be required to defend the scientific methodology, merit and conclusions of the dissertation research. The unanimous approval of the Advisory Committee is required to pass the examination. After any revisions in the dissertation specified by the committee have been made, the dissertation is submitted to the Graduate School.

The Ph.D. student's Request to Schedule the Doctoral Oral Examination form must be received by the Graduate Program Coordinator *three weeks* prior to the requested exam date. The Graduate Program Coordinator will then forward the request to the appropriate Director for approval. After the Director approves it, the form will be sent to the Graduate School for approval. The request may be made no

earlier than four months after successful completion of the Preliminary Examination. Once again, it is the student's responsibility to set the date and time of the examination with the committee members *and* the Graduate School representative (if applicable). It is also the student's responsibility to reserve the examination room. At this time, students usually make arrangements to hold their seminar. The student is also responsible for reserving the seminar room, and must submit a title for his/her seminar to the Graduate Program Coordinator in time for the notices to be distributed.

FUNCTIONAL GENOMICS

MASTER'S (MR) – FUNCTIONAL GENOMICS

The Master's of Functional Genomics degree is non-thesis, and require only coursework and a final oral exam.

1. SELECTION OF AN ADVISORY COMMITTEE-----**SECOND SEMESTER**

Soon after selecting a Committee Chair/Major Graduate Advisor, the student, in conjunction with the Chair, will select a Graduate Advisory Committee. The functions of this committee are to direct the student's coursework, provide advice and expertise with regard to their research program, give the preliminary and defense examinations and evaluate and critique the thesis or dissertation. Students should seek committee members who will actively participate in the student's training and who provide balance in terms of expertise.

MR candidates, the committee must be comprised of at least **three** NC State University Graduate faculty:

- One Functional Genomics faculty member
- One Bioinformatics faculty member
- One other faculty member (who does not need to be a member of the Genomic Sciences faculty).

Once the student and advisor have settled on a list of potential committee members, the student asks the faculty member if they are willing to serve on their Advisory Committee and gives a general outline of the research program. Most faculty members who are asked will willingly serve on student committees. In some cases, a faculty member may decline if they feel they are over-committed or do not really have the expertise to benefit the student.

Once the appropriate number of committee members has agreed to serve, the committee members are submitted by the student for approval by the Director of Graduate Programs. ***The Advisory Committee must be formed and approved by the relevant Director of Graduate Programs no later than the third semester of study.***

2. COMPLETING A PLAN OF WORK-----**BEFORE END OF SECOND SEMESTER**

All graduate students are required to submit an **online** Graduate Plan of Work (POW). Students must meet with their advisor and create their POW. The student must then enter their Plan of Work and Advisory Committee online via Student Self Service in MyPack Portal. The plan of work and advisory committee are designed as advising tools. You may begin working on your plan of work and advisory committee as soon as you matriculate and become active in the graduate career. You may also save in-progress work and submit it at a later date. You may make changes at any time up until submission. For detailed instructions, refer to the SIS Training and Operations Manual, <http://www.ncsu.edu/grad/faculty-and-staff/docs/GRAD-SIS-training-manual-students.pdf>.

For Functional Genomics MR candidates, the Plan of Work must be submitted and approved by the Director of Graduate Programs before the end of the second semester of study.

Changes in Advisory Committee or Plan of Work: If one or more of your committee members retires or leaves the university, you may request a change in your committee. If one or more committee members are on sabbatical, you may request a substitute for the missing members for a particular examination, but this should be done in a timely manner. In other words, monitor your committee and Plan of Work and as soon as you detect a problem, make arrangements to correct it immediately.

If there are any discrepancies or information changes in your program, such as dropping or substituting courses or committee members, please be aware that this will cause a delay in scheduling examinations. The previous information must be changed and/or corrected and then *resubmitted* to the Graduate School for approval, which takes time. Keep ahead of the program by requesting any changes in writing (see the Graduate Program Coordinator for the proper forms) as soon as you are aware of them! Also, please keep in mind that you cannot make any changes to your Plan of Work during your final semester of study.

3. **FINAL ORAL EXAMINATION**-----**LAST YEAR OF STUDY**

The student must pass an oral examination administered by the Graduate Advisory Committee at the end of the degree program. The emphasis of the examination will be a synthesis of course work rather than research. *This exam must be passed before a deadline specific to each semester in order to graduate that semester.* Check the NCSU Graduate School web page (<http://www.ncsu.edu/grad/etd/deadlines.html>) to determine the actual deadline. There will be no exceptions, and tuition must be paid the following semester if graduation is postponed to that semester.

The MR student's Request to Schedule the Final Oral Examination form must be received by the Graduate Program Coordinator *three weeks* prior to the proposed examination date. The Graduate Program Coordinator will then forward the request to the appropriate Director for approval. After the Director approves the request, the Graduate Program Coordinator will then forward the completed, signed form to the Graduate School for final approval. The student is responsible for arranging the date and time with his/her committee and reserving the examination room.

MASTER'S (MS) – FUNCTIONAL GENOMICS

1. LABORATORY ROTATIONS-----DURING FIRST SEMESTER

All new *Functional Genomics* graduate students who are supported by university or fellowship funds are required to rotate through at least three research programs before choosing a Committee Chair/Major Advisor. The rotations allow the students to gain first-hand information on specific programs in which they are interested and allow the faculty and students to assess compatibility. The rotations also facilitate interactions between new students and departmental personnel, as well as aid in technology transfer between programs. *Please discuss possible rotations with the Director for Functional Genomics.*

The rotations usually last about three to five weeks and involve a small project on which the student is expected to work full time with the exception of classes and seminars. Students usually rotate through three programs and select a Committee Chair/Major Advisor by the end of the second semester. However, students have the option of participating in more than three rotations if they so desire.

New students are responsible for setting up their rotation schedules. The exact start time and length of each rotation is flexible, but students usually begin their first rotation by the second week of classes. The first step is to narrow down potential research programs based on faculty research descriptions and faculty interest in new students. Students should visit the appropriate faculty member to indicate an interest in participating in a rotation in their research program and to discuss the feasibility and timing of the rotation. Setting up the rotation schedule sometimes requires a little juggling, as a faculty member may have several students who are interested in rotating during the same semester.

Once a rotation schedule is set, please give a copy of your schedule to the Graduate Program Coordinator, so they know where to contact you during the first semester.

2. SELECTION OF A MAJOR ADVISOR-----AT COMPLETION OF ROTATIONS

All students in graduate programs must have a Committee Chair/Major Graduate Advisor who is a member of the Genomic Science Graduate Faculty (see pages 11-13). ***This MUST be completed no later than the end of the second semester.***

Once discussions with faculty are completed, the student selects a Committee Chair/Major Graduate Advisor. This important decision should be made with considerable thought and information, ***and must be discussed with the Director for Functional Genomics before a final decision is made.*** A number of tips for selecting advisors has been compiled by previous graduate students and is listed in Appendix C. Following discussions, students often have a clear idea of which faculty member they would like to have as an advisor, while in other cases, students are enthusiastic about more than one possible advisor. In the latter situation, it is advisable to revisit the faculty to discuss potential graduate programs in more detail.

Once a student settles on an advisor, the student should set up a meeting with the faculty member and indicate an interest in working with that person. At that time the faculty member will accept or decline the student as an advisee. Although it is rare, a faculty member may decline to accept a student because they are

concerned about funding, have accepted other new students or feel that the student does not fit into their program.

3. **INITIATION OF THE RESEARCH PROGRAM**-----**SECOND SEMESTER**

All candidates for degrees are required to conduct a program of original research. Once the advisor is selected, the student and advisor select the research topic. The research program should initiate in the second semester and continue throughout the degree program. It is expected that this work should make an original contribution to scientific knowledge and it is expected that student thesis research will be accepted for publication in high caliber professional journals. The research constitutes a vital aspect of graduate student training, and successful completion of the graduate program will be measured largely by the quality of this research.

4. **SELECTION OF AN ADVISORY COMMITTEE**-----**SECOND SEMESTER**

Soon after selecting a Committee Chair/Major Graduate Advisor, the student, in conjunction with the Chair, will select a Graduate Advisory Committee. The functions of this committee are to direct the student's coursework, provide advice and expertise with regard to their research program, give the preliminary and defense examinations and evaluate and critique the thesis or dissertation. Students should seek committee members who will actively participate in the student's training and who provide balance in terms of expertise.

For M.S. candidates, the committee must be comprised of at least **three** NC State University Graduate faculty:

- One Functional Genomics faculty member
- One Bioinformatics faculty member
- One other faculty member (who does not need to be a member of the Genomic Sciences faculty).

If the student has elected to minor in a discipline, one of the Graduate Advisory Committee members must represent that Minor.

Once the student and advisor have settled on a list of potential committee members, the student asks the faculty member if they are willing to serve on their Advisory Committee and gives a general outline of the research program. Most faculty members who are asked will willingly serve on student committees. In some cases, a faculty member may decline if they feel they are over-committed or do not really have the expertise to benefit the student.

Once the appropriate number of committee members has agreed to serve, the committee members are submitted by the student for approval by the Director of Graduate Programs. ***The Advisory Committee must be formed and approved by the relevant Director of Graduate Programs no later than the second semester of study.***

Graduate School and Outside Committee Representatives: A Graduate School Representative (GSR) or Outside Representative is required on all PhD committees. This person can be anyone on your committee who is not a chair or part of your degree program. If no one on your committee agrees to this roll, an extra committee member will be assigned to your committee. This person's job is to ensure that your exams are given fairly and without bias.

Members of the Graduate Faculty from non NCSU campuses: Graduate faculty from UNC-Chapel Hill, UNC-Charlotte, UNC-Greensboro, and Duke University may serve as one of the required *members* (they cannot serve as Chair) of the Graduate Advisory Committee when appropriate by submitting a Graduate

Advisory Committee Appointment Form for Inter-Institutional Member. The professor must be a member of the Graduate Faculty of the University in question.

A faculty member from another university (who is not an Inter-institutional Graduate Faculty member), or a professional from industry or government with credentials comparable to those required for membership on the Graduate Faculty, may serve as an External Member *in addition* to the number of committee members normally required. External Members will have full voting privileges and are expected to participate in the student's preliminary and final examinations. They will also be consulted in the development of the student's Plan of Work and will sign the thesis or dissertation. Please see our Administrative Assistant for the required form to appoint someone as an External Member.

If there must be a change in the committee, the change must be requested in writing and be approved by the relevant Director of Graduate Programs and the Graduate School. Please see our Administrative Assistant for the required form to change a member of the Graduate Advisory Committee.

5. ADVISORY COMMITTEE MEETING-----BEFORE END OF SECOND SEMESTER

The first meeting between the Advisory Committee and student should occur by the end of the second semester of study. Students are required to submit a short research plan to their committee before this meeting. The plan should cover background information, rationale for the project and a brief outline of the initial experiments. The plan should then be presented orally at the first meeting and forms the basis of discussion on the research plan as well as guide decisions on courses for the Plan of Work.

6. COMPLETING A PLAN OF WORK-----BEFORE END OF SECOND SEMESTER

All graduate students are required to submit an **online** Graduate Plan of Work (POW). Students must meet with their advisor and create their POW. The student must then enter their Plan of Work and Advisory Committee online via Student Self Service in MyPack Portal. The plan of work and advisory committee are designed as advising tools. You may begin working on your plan of work and advisory committee as soon as you matriculate and become active in the graduate career. You may also save in-progress work and submit it at a later date. You may make changes at any time up until submission. For detailed instructions, refer to the SIS Training and Operations Manual, <http://www.ncsu.edu/grad/faculty-and-staff/docs/GRAD-SIS-training-manual-students.pdf>.

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For Functional Genomics candidates, the Plan of Work must be submitted and approved by the Director of Graduate Programs before the end of the second semester of study.

7. ADVISORY COMMITTEE MEETINGS-----ONCE PER YEAR

The Graduate Advisory Committee must meet a minimum of once per academic year to evaluate student progress. Progress reports after each meeting should be filed with the relevant Director of Graduate Program.

8. TEACHING REQUIREMENT-----AFTER FIRST YEAR

There is no specific teaching requirement for the Genomic Sciences degree programs. Genomic Sciences graduate students are encouraged, however, to take advantage of teaching opportunities in their home department or as part of the Preparing Future Leaders program (<http://www.ncsu.edu/grad/preparing-future-leaders/index.php>).

9. FINAL ADVISORY COMMITTEE MEETING-----LAST YEAR OF STUDY

The student must meet with the Advisory Committee six to nine months before the expected graduation date to allow the committee to evaluate the research and to approve the final research plan and tentative graduation date.

10. PREPARATION OF THESIS OR DISSERTATION----- LAST YEAR OF STUDY

Upon completion of the research program, the results of this research are presented to the student's Committee Chair/Major Graduate Advisor and Advisory Committee in the form of a thesis (M.S.) or dissertation (Ph.D.). Students should consult the following website (<http://www.ncsu.edu/grad/etd/index.php>) for important information regarding the preparation of theses and dissertations. Students are also required to attend an Electronic Theses and Dissertations (ETD) Workshop; these are held by the Graduate School throughout the year.

The Committee Chair/Major Graduate Advisor must approve the thesis or dissertation before it is submitted to the Advisory Committee for review. It is the responsibility of both the student and Committee Chair/Major Graduate Advisor to ensure that the material is in final form and of high quality before review by the committee. *The Advisory Committee is responsible for reviewing the scientific merit of the work and should be given at least two weeks (preferably more) before the final oral examination date to accomplish this.*

11. THESIS/DISSERTATION SEMINAR----- LAST YEAR OF STUDY

All students are required to present a formal departmental seminar describing their graduate research project (rationale, methods, data, and conclusions). This seminar is generally presented during the final semester of candidacy, frequently immediately prior to the Final Oral Examination

12. FINAL ORAL EXAMINATION----- LAST YEAR OF STUDY

The oral defense of the dissertation is the third and final examination for MS. students. This occurs in the final semester of graduate study after completion of the dissertation. In this examination, the student will be required to defend the scientific methodology, merit and conclusions of the dissertation research. The unanimous approval of the Advisory Committee is required to pass the examination. After any revisions in the dissertation specified by the committee have been made, the dissertation is submitted to the Graduate School.

The MS. student's Request to Schedule the Oral Examination form must be received by the Graduate Program Coordinator *three weeks* prior to the requested exam date. The Graduate Program Coordinator will then forward the request to the appropriate Director for approval. After the Director approves it, the form will be sent to the Graduate School for approval. The request may be made no earlier than four months after successful completion of the Preliminary Examination. Once again, it is the student's responsibility to set the date and time of the examination with the committee members *and* the Graduate School

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representative (if applicable). It is also the student's responsibility to reserve the examination room. At this time, students usually make arrangements to hold their seminar. The student is also responsible for reserving the seminar room, and must submit a title for his/her seminar to the Graduate Program Coordinator in time for the notices to be distributed.

Ph.D – FUNCTIONAL GENOMICS

1. LABORATORY ROTATIONS-----DURING FIRST SEMESTER

All new *Functional Genomics* graduate students who are supported by university or fellowship funds are required to rotate through at least three research programs before choosing a Committee Chair/Major Advisor. The rotations allow the students to gain first-hand information on specific programs in which they are interested and allow the faculty and students to assess compatibility. The rotations also facilitate interactions between new students and departmental personnel, as well as aid in technology transfer between programs. *Please discuss possible rotations with the Director for Functional Genomics.*

The rotations usually last about three to five weeks and involve a small project on which the student is expected to work full time with the exception of classes and seminars. Students usually rotate through three programs and select a Committee Chair/Major Advisor by the end of the first semester. However, students have the option of participating in more than three rotations if they so desire.

New students are responsible for setting up their rotation schedules. The exact start time and length of each rotation is flexible, but students usually begin their first rotation by the second week of classes. The first step is to narrow down potential research programs based on faculty research descriptions and faculty interest in new students. Students should visit the appropriate faculty member to indicate an interest in participating in a rotation in their research program and to discuss the feasibility and timing of the rotation. Setting up the rotation schedule sometimes requires a little juggling, as a faculty member may have several students who are interested in rotating during the same semester.

Once a rotation schedule is set, please give a copy of your schedule to the Graduate Program Coordinator, so they know where to contact you during the first semester.

2. SELECTION OF A MAJOR ADVISOR-----AT COMPLETION OF ROTATIONS

All students in graduate programs must have a Committee Chair/Major Graduate Advisor who is a member of the Genomic Science Graduate Faculty (see pages 11-13). ***This MUST be completed no later than the end of the second semester.***

Once discussions with faculty are completed, the student selects a Committee Chair/Major Graduate Advisor. This important decision should be made with considerable thought and information, ***and must be discussed with the Director for Functional Genomics before a final decision is made.*** A number of tips for selecting advisors has been compiled by previous graduate students and is listed in Appendix C. Following discussions, students often have a clear idea of which faculty member they would like to have as an advisor, while in other cases, students are enthusiastic about more than one possible advisor. In the latter situation, it is advisable to revisit the faculty to discuss potential graduate programs in more detail.

Once a student settles on an advisor, the student should set up a meeting with the faculty member and indicate an interest in working with that person. At that time the faculty member will accept or decline the student as an advisee. Although it is rare, a faculty member may decline to accept a student because they are

concerned about funding, have accepted other new students or feel that the student does not fit into their program.

3. **INITIATION OF THE RESEARCH PROGRAM**-----**SECOND SEMESTER**

All candidates for degrees are required to conduct a program of original research. Once the advisor is selected, the student and advisor select the research topic. The research program should initiate in the second semester and continue throughout the degree program. It is expected that this work should make an original contribution to scientific knowledge and it is expected that student thesis research will be accepted for publication in high caliber professional journals. The research constitutes a vital aspect of graduate student training, and successful completion of the graduate program will be measured largely by the quality of this research.

4. **SELECTION OF AN ADVISORY COMMITTEE**-----**SECOND SEMESTER**

Soon after selecting a Committee Chair/Major Graduate Advisor, the student, in conjunction with the Chair, will select a Graduate Advisory Committee. The functions of this committee are to direct the student's coursework, provide advice and expertise with regard to their research program, give the preliminary and defense examinations and evaluate and critique the thesis or dissertation. Students should seek committee members who will actively participate in the student's training and who provide balance in terms of expertise.

For Ph.D. candidates Functional Genomics, the committee must be comprised of at least **four** NC State University Graduate faculty:

- One Functional Genomics faculty member
- One Bioinformatics faculty member
- Two other faculty members (who do not need to be members of the Genomic Sciences faculty).

If the student has elected to minor in a discipline, one of the Graduate Advisory Committee members must represent that Minor.

Once the student and advisor have settled on a list of potential committee members, the student asks the faculty member if they are willing to serve on their Advisory Committee and gives a general outline of the research program. Most faculty members who are asked will willingly serve on student committees. In some cases, a faculty member may decline if they feel they are over-committed or do not really have the expertise to benefit the student.

Once the appropriate number of committee members has agreed to serve, the committee members are submitted by the student for approval by the Director of Graduate Programs. ***The Advisory Committee must be formed and approved by the relevant Director of Graduate Programs no later than the second (Functional Genomics) or third (Bioinformatics) semester of study.***

Graduate School and Outside Committee Representatives: A Graduate School Representative (GSR) or Outside Representative is required on all PhD committees. This person can be anyone on your committee who is not a chair or part of your degree program. If no one on your committee agrees to this roll, an extra committee member will be assigned to your committee. This person's job is to ensure that your exams are given fairly and without bias.

Members of the Graduate Faculty from non NCSU campuses: Graduate faculty from UNC-Chapel Hill, UNC-Charlotte, UNC-Greensboro, and Duke University may serve as one of the required *members* (they cannot serve as Chair) of the Graduate Advisory Committee when appropriate by submitting a Graduate

Advisory Committee Appointment Form for Inter-Institutional Member. The professor must be a member of the Graduate Faculty of the University in question.

A faculty member from another university (who is not an Inter-institutional Graduate Faculty member), or a professional from industry or government with credentials comparable to those required for membership on the Graduate Faculty, may serve as an External Member *in addition* to the number of committee members normally required. External Members will have full voting privileges and are expected to participate in the student's preliminary and final examinations. They will also be consulted in the development of the student's Plan of Work and will sign the thesis or dissertation. Please see our Administrative Assistant for the required form to appoint someone as an External Member.

If there must be a change in the committee, the change must be requested in writing and be approved by the relevant Director of Graduate Programs and the Graduate School. Please see our Administrative Assistant for the required form to change a member of the Graduate Advisory Committee.

5. ADVISORY COMMITTEE MEETING-----BEFORE END OF SECOND SEMESTER

The first meeting between the Advisory Committee and student should occur by the end of the second semester of study. Students are required to submit a short research plan to their committee before this meeting. The plan should cover background information, rationale for the project and a brief outline of the initial experiments. The plan should then be presented orally at the first meeting and forms the basis of discussion on the research plan as well as guide decisions on courses for the Plan of Work.

6. COMPLETING A PLAN OF WORK-----BEFORE END OF SECOND SEMESTER

All graduate students are required to submit an **online** Graduate Plan of Work (POW). Students must meet with their advisor and create their POW. The student must then enter their Plan of Work and Advisory Committee online via Student Self Service in MyPack Portal. The plan of work and advisory committee are designed as advising tools. You may begin working on your plan of work and advisory committee as soon as you matriculate and become active in the graduate career. You may also save in-progress work and submit it at a later date. You may make changes at any time up until submission. For detailed instructions, refer to the SIS Training and Operations Manual, <http://www.ncsu.edu/grad/faculty-and-staff/docs/GRAD-SIS-training-manual-students.pdf>.

Changes in Advisory Committee or Plan of Work: If one or more of your committee members retires or leaves the university, you may request a change in your committee. If one or more committee members are on sabbatical, you may request a substitute for the missing members for a particular examination, but this should be done in a timely manner. In other words, monitor your committee and Plan of Work and as soon as you detect a problem, make arrangements to correct it immediately.

If there are any discrepancies or information changes in your program, such as dropping or substituting courses or committee members, please be aware that this will cause a delay in scheduling examinations. The previous information must be changed and/or corrected and then *resubmitted* to the Graduate School for approval, which takes time. Keep ahead of the program by requesting any changes in writing (see the Graduate Program Coordinator for the proper forms) as soon as you are aware of them! Also, please keep in mind that you cannot make any changes to your Plan of Work during your final semester of study

For Functional Genomics candidates, the Plan of Work must be submitted and approved by the Director of Graduate Programs before the end of the second semester of study.

7. ADVISORY COMMITTEE MEETINGS-----ONCE PER YEAR

Genomic Sciences Graduate Programs
Ricks Hall

(W): <http://brc.ncsu.edu/genomics/>

(P): 919.515.2535

(F):919.515.7315

The Graduate Advisory Committee must meet a minimum of once per academic year to evaluate student progress. Progress reports after each meeting should be filed with the relevant Director of Graduate Program.

8. **TEACHING REQUIREMENT**-----**AFTER FIRST YEAR**

There is no specific teaching requirement for the Genomic Sciences degree programs. Genomic Sciences graduate students are encouraged, however, to take advantage of teaching opportunities in their home department or as part of the Preparing Future Leaders program (<http://www.ncsu.edu/grad/preparing-future-leaders/index.php>).

9. **PRELIMINARY EXAMINATIONS**-----**BEFORE END OF THIRD YEAR**

Ph.D. students are required to take both written and oral preliminary examinations. Both written and oral examinations must be completed by the end of the third year of the student's doctoral program. The student, together with the Advisory Committee, chooses the format and details for the examinations. Two possible formats are indicated below, but other formats followed by NC State University departments are acceptable as well. *Forms must be filled out and submitted to the Graduate School at least three weeks prior to scheduling the preliminary oral examination.*

Examination Format 1:

- The written examination consists of a grant proposal written on a topic that is not directly on the students' dissertation research. The proposal should be in a widely used format relevant to the topic (e.g., NIH, NSF, DOE, USDA), excluding sections on budget and personnel. The Advisory Committee must approve the proposal topic before the student begins writing to assure that the topic is acceptable and sufficiently different from the dissertation research. The student then submits a one-page pre-proposed document to the committee for approval. Once the Specific Aims are approved, the student is given a finite time (usually two to three weeks) to complete the proposal.
- The oral examination for Format 1 consists of an oral defense of the research proposal. The examination focuses on the proposal, but all facets of *either* Bioinformatics *or* Functional Genomics may be examined.

Examination Format 2:

- The written examination consists of questions from members of the Advisory Committee. The format may vary among committee members and may take the form of closed or open book questions or short papers on a topic. Students receive one question at a time and are given a finite time to complete the assignment (usually one to several days).
- The oral examination for Format 2 consists of questions from the Advisory Committee. These usually begin with topics from the written examination, but all facets of *either* Bioinformatics *or* Functional Genomics may be examined.

For both formats, a unanimous favorable vote from the committee is necessary to pass the written examination. Approval may be conditional upon the student taking additional work in a specific area. The committee must make clear how any conditions will be met by the student.

After the satisfactory completion of the written comprehensive examination (including the completion of any conditions set for approval) the student may then request to schedule the Preliminary Oral Examination. This is scheduled through the Graduate School after notification from the Advisory Committee that the student has passed the written exam. The Genomic Sciences Graduate Program

requires that the completed form entitled “Request for Approval to Schedule Doctoral Oral Examination” be submitted to the Graduate Program Coordinator *three weeks* prior to the date of the proposed exam. The Graduate Program Coordinator will then forward the request to the appropriate Director of Graduate Program for approval. After the Director approves the request, the Graduate Program Coordinator will then forward the completed signed form to the Graduate School for final approval. These details and time lines are important and must be adhered to.

The purpose of the oral examination is to demonstrate a thorough working knowledge of Bioinformatics or Functional Genomics, the ability to apply this knowledge, and the ability to use the scientific method in solving problems. As in the case of the written examination, a unanimous favorable vote from the Advisory Committee is required to pass this examination, and approval may be conditional upon additional work in a specific area. If the student does not pass the oral examination, the Advisory Committee may recommend a re-examination. At least one semester must elapse before re-examination, and only one re-examination is allowed.

Students with co-majors or taking minors in other disciplines will need to meet the preliminary exam requirements for those programs as well.

10. FINAL ADVISORY COMMITTEE MEETING-----LAST YEAR OF STUDY

The student must meet with the Advisory Committee six to nine months before the expected graduation date to allow the committee to evaluate the research and to approve the final research plan and tentative graduation date.

11. PREPARATION OF THESIS OR DISSERTATION----- LAST YEAR OF STUDY

Upon completion of the research program, the results of this research are presented to the student’s Committee Chair/Major Graduate Advisor and Advisory Committee in the form of a thesis (M.S.) or dissertation (Ph.D.). Students should consult the following website (<http://www.ncsu.edu/grad/etd/index.php>) for important information regarding the preparation of theses and dissertations. Students are also required to attend an Electronic Theses and Dissertations (ETD) Workshop; these are held by the Graduate School throughout the year.

The Committee Chair/Major Graduate Advisor must approve the thesis or dissertation before it is submitted to the Advisory Committee for review. It is the responsibility of both the student and Committee Chair/Major Graduate Advisor to ensure that the material is in final form and of high quality before review by the committee. *The Advisory Committee is responsible for reviewing the scientific merit of the work and should be given at least two weeks (preferably more) before the final oral examination date to accomplish this.*

12. THESIS/DISSERTATION SEMINAR----- LAST YEAR OF STUDY

All students are required to present a formal departmental seminar describing their graduate research project (rationale, methods, data, and conclusions). This seminar is generally presented during the final semester of candidacy, frequently immediately prior to the Final Oral Examination

13. FINAL ORAL EXAMINATION----- LAST YEAR OF STUDY

The oral defense of the dissertation is the third and final examination for Ph.D. students. This occurs in the final semester of graduate study after completion of the dissertation. In this examination, the student will be required to defend the scientific methodology, merit and conclusions of the dissertation research. The unanimous approval of the Advisory Committee is required to pass the examination. After any revisions in the dissertation specified by the committee have been made, the dissertation is submitted to the Graduate School.

The Ph.D. student's Request to Schedule the Doctoral Oral Examination form must be received by the Graduate Program Coordinator *three weeks* prior to the requested exam date. The Graduate Program Coordinator will then forward the request to the appropriate Director for approval. After the Director approves it, the form will be sent to the Graduate School for approval. The request may be made no earlier than four months after successful completion of the Preliminary Examination. Once again, it is the student's responsibility to set the date and time of the examination with the committee members *and* the Graduate School representative (if applicable). It is also the student's responsibility to reserve the examination room. At this time, students usually make arrangements to hold their seminar. The student is also responsible for reserving the seminar room, and must submit a title for his/her seminar to the Graduate Program Coordinator in time for the notices to be distributed.

VI. PREPARING FOR GRADUATION

WHEN	WHAT	PROGRAM
After Final Oral Exams are passed	Applying for Graduation	MR Functional Genomics MR Bioinformatics M.S. Functional Genomics Ph.D. Functional Genomics Ph.D. Bioinformatics
Final few semesters	Meeting with Thesis Editor	M.S. Functional Genomics Ph.D. Functional Genomics Ph.D. Bioinformatics
Final semester	Exit Interview	MR Functional Genomics MR Bioinformatics M.S. Functional Genomics Ph.D. Functional Genomics Ph.D. Bioinformatics
End of Spring and Fall semesters	Graduation	MR Functional Genomics MR Bioinformatics M.S. Functional Genomics Ph.D. Functional Genomics Ph.D. Bioinformatics
Any time	Departure from NCSU before completion of degree requirements	MR Functional Genomics MR Bioinformatics M.S. Functional Genomics Ph.D. Functional Genomics Ph.D. Bioinformatics

1. APPLYING FOR GRADUATION----- **AFTER FINAL ORAL EXAMS ARE PASSED**

All students: After you have passed your Final Oral Exam, you must apply for graduation online via Student Self Service in MYPACK Portal. Instructions for applying to graduate can be found in the SIS Training and Operations Manual, <http://www.ncsu.edu/grad/faculty-and-staff/docs/GRAD-SIS-training-manual-students.pdf>.

2. MEETING WITH THE THESIS EDITOR----- **FINAL FEW SEMESTERS**

Students are no longer required to meet with the Thesis Editor in order to submit the thesis to the Graduate School. However, there are several steps that must be followed before you can submit your thesis draft. Due to the many recent changes in submission procedures, it is imperative that you refer to the on-line Thesis and Dissertation Guide (<http://www.ncsu.edu/grad/etd/index.php>) for *detailed information and instructions* from the Thesis Editor. In general, the Thesis Editor will check the thesis to make sure there are no gross formatting errors and to be sure it conforms to the guidelines for thesis preparation. If any changes are necessary, the Thesis Editor will contact you. You will have a specified length of time to make corrections and return the thesis. If you do not return the thesis on time, you will not have met the graduation deadline date and will not be allowed to graduate. Therefore, you will need to register the next

semester to fulfill the continuous registration policy. If you return the thesis on time, you will be cleared for graduation.

All thesis writing students should attend an Early Thesis Dissertation (ETD) workshop during their final semesters. This work shop will explain the ETD guidelines, deadlines, and expectations. The ETD website is filled with valuable information such as deadlines, templates, and workshop registrations, <http://www.ncsu.edu/grad/etd>.

3. EXIT INTERVIEW-----FINAL SEMESTER

All graduate students are required to have an exit interview with the Director of Graduate Programs (Bioinformatics or Functional Genomics) before leaving the program. The main purpose of the interview is for the Director to obtain information directly from the student regarding the graduate training program.

4. GRADUATION-----END OF SPRING AND FALL SEMESTERS

Formal University commencement exercises are held at the end of the spring and fall semesters, but any student who graduated the preceding second summer session is eligible to participate in the December commencement if he or she notifies the Graduate School in writing of such intent at least four weeks in advance of the actual commencement date. Conversely, any student scheduled to graduate in the spring or fall semesters but not planning to attend University commencement exercises should notify the Graduate School in writing of the desire to have the degree conferred in absentia.

5. DEPARTURE FROM NCSU BEFORE COMPLETION OF DEGREE-----ANY TIME

Graduate students are expected to complete all requirements for the degree before leaving the University, and it is also in their best interest to see that manuscripts are submitted for publication before they depart. In rare cases, students leave the University before their final oral examination, or before the thesis or dissertation is corrected and approved by the Graduate School. Students who leave the University before completion of the degree must agree upon a time limit to finish their degree with the appropriate Director of Graduate Programs (Bioinformatics or Functional Genomics). The Graduate School must approve the thesis or dissertation by the graduation deadline of the second semester after leaving the University.

VII. PROGRAMMATIC REGULATIONS AND REQUIREMENTS

1. WAIVERS FOR CORE COURSES

All students who have previously taken graduate level courses may request a waiver for similar core requirements in our graduate programs. The process for a waiver is as follows:

- The student should contact the NC State University course instructor and discuss the content of the previous course with the instructor, using the course syllabus to show the course topics and requirements.
- If the instructor is satisfied that the previous course is sufficiently similar to the core requirement, the instructor should indicate to the appropriate Director of Graduate Programs (via email or letter) that the required course should be waived.
- Students who obtain a waiver must *still fulfill the entire credit-hour requirement for their degree program*, by substituting additional classes or research credit for the waived classes.
- The choice of classes or research credit should be made by the Major Advisor and the Graduate Advisory Committee in consultation with the student.

2. CREDIT-HOUR REQUIREMENTS

Doctoral degrees at NC State require a minimum of 72 graduate credit hours beyond the Bachelor's degree. For a Ph.D. student who has a Master's degree from a university other than NC State, a maximum of 18 hours of relevant graduate credit from the Master's degree may be applied toward this minimum, upon the recommendation of the student's Graduate Advisory Committee. Therefore, the minimum credit-hour requirement in this case is 54 credit hours. If a student completes a Master's degree at NC State and continues for a doctoral degree *without a break in time*, up to 36 credit-hours taken while in Master's status may be used to meet minimum requirements for the doctoral degree.

3. OVERLAP WITH MINOR REQUIREMENTS

Students who elect to pursue a Minor in another discipline may use appropriate Genomic Sciences elective courses for both the Minor and Genomic Sciences requirements. For example, students who minor in Biotechnology may count BIT 810 for both Major and Minor requirements. A Minor is declared on a student's POW. For a Master's degree, at least 9 hours on the POW must represent the minor. For a PhD, at least 12 hours on the POW must represent the minor.

VIII. GENOMIC SCIENCES COURSE REQUIREMENTS

1. BIOINFORMATICS

a. Master (MR), Bioinformatics (32 credits)

- i. Genomic Sciences core (see description below) - 12 cr.
- ii. Bioinformatics core (see description below) - 20 cr.

b. Ph.D., Bioinformatics (72 credits)

- i. Genomic Sciences core (see description below) - 12 cr.
- ii. Bioinformatics core (see description below) - 20 cr.
- iii. Bioinformatics Ph.D. courses and research (see description below) - 40 cr.

GENOMIC SCIENCES CORE (12 CREDITS)			
Course Number	Course Title	Credits	Offered
ST 590A	Bioinformatics I	3	Fall
GN 735	Functional Genomics	3	Spring
PP 610 or PP 810 (to be taken twice)	Genomic Sciences Journal Club	1	Fall, Spring
GN 701 or BCH 703	Molecular Genetics <i>or</i> Macromolecular Synthesis & Regulation	3	Fall
GN 850	Professionalism and Ethics	1	Fall

BIOINFORMATICS CORE (20 CREDITS)			
Course Number	Course Title	Credits	Offered
ST 590C	Bioinformatics II	3	Spring
CSC 530	Computational Methods for Molecular Biology	3	Fall (alternate years)
ST 512	Experimental Statistics for Biological Sciences II	3	Fall, Spring, Summer
ST 610 or ST 810	Bioinformatics Consulting	3	Spring
Elective	Electives (three)	9	-

ALL DEGREE CANDIDATES MUST TAKE THE GENOMIC SCIENCES CORE COURSES

BIOINFORMATICS PH.D. COURSES (40 CREDITS)			
<u>Course Number</u>	<u>Course Title</u>	<u>Credits</u>	<u>Offered</u>
PP 610 or PP 810 (twice more)	Genomics Sciences Journal Club	1	Fall, Spring
ST 501*	Fundamentals of Statistical Inference I	3	Fall, Spring
ST 502*	Fundamentals of Statistical Inference II	3	Fall, Spring
Research/Electives	Dissertational Research/Electives	32	-
<i>*ST 501 & ST 502 may be replaced by appropriate CSC courses with the approval of DGP and/or the Graduate Advisory Committee.</i>			

ALL DEGREE CANDIDATES MUST TAKE THE GENOMIC SCIENCES CORE COURSES

2. FUNCTIONAL GENOMICS

- a. Master (MR), Functional Genomics (30 credits)
 - i. Genomic Sciences core (see description below) - 12 cr.
 - ii. Functional Genomics MR courses (see description below) - 18 cr.
- b. M.S., Functional Genomics (36 credits)
 - i. Genomic Sciences core (see description below) - 12 cr.
 - ii. Functional Genomics M.S. courses (see description below) - 24 cr.
- c. Ph.D., Functional Genomics (72 credits)
 - i. Genomic Sciences core (see description below) - 12 cr.
 - ii. Functional Genomics Ph.D. courses (see description below) – 60 cr.

GENOMIC SCIENCES CORE (12 CREDITS)			
Course Number	Course Title	Credits	Offered
ST 590A	Bioinformatics I	3	Fall
GN 735	Functional Genomics	3	Spring
PP 610 or PP 810 (to be taken twice)	Genomic Sciences Journal Club	1	Fall, Spring
GN 701 or BCH 703	Molecular Genetics <i>or</i> Macromolecular Synthesis & Regulation	3	Fall
GN 850	Professionalism and Ethics	1	Fall

MASTER (MR) FUNCTIONAL GENOMICS COURSES (18 CREDITS)			
Course Number	Course Title	Credits	Offered
GN 702 <i>or</i> BCH 705	Cellular and Developmental Genetics <i>OR</i> Molecular Biology of the Cell	3	Spring
ST 511	Experimental Statistics for Biological Sciences I	3	Fall, Spring, Summer
GN 703 <i>or</i> BCH 701	Population & Quantitative Genetics <i>or</i> Macromolecular Structure	3	Spring (GN 703) Fall (BCH 701)
FG I Electives *	FG I Electives * (three)	9	-

M.S FUNCTIONAL GENOMICS COURSES (24 CREDITS)			
Course Number	Course Title	Credits	Offered
GN 702 <i>or</i> BCH 705	Cellular and Developmental Genetics <i>OR</i> Molecular Biology of the Cell	3	Spring
ST 511	Experimental Statistics for Biological Sciences I	3	Fall, Spring, Summer

GN 703 <i>or</i> BCH 701	Population & Quantitative Genetics <i>or</i> Macromolecular Structure	3	Spring (GN 703) Fall (BCH 701)
FG I Electives *	FG I Electives * (three)	9	-
Research/Electives (any department code)	Dissertational Research / Electives	6	-

ALL DEGREE CANDIDATES MUST TAKE THE GENOMIC SCIENCES CORE COURSES

PH.D. FUNCTIONAL GENOMICS COURSES (60 CREDITS)			
Course Number	Course Title	Credits	Offered
PP 610 or PP 810	Genomics Journal Club (twice more)	1	Fall, Spring
GN 702 <i>or</i> BCH 705	Cellular and Developmental Genetics <i>OR</i> Molecular Biology of the Cell	3	Spring
ST 511	Experimental Statistics for Biological Sciences I	3	Fall, Spring, Summer
GN 703 <i>or</i> BCH 701	Population & Quantitative Genetics <i>or</i> Macromolecular Structure	3	Spring (GN 703) Fall (BCH 701)
FG I Electives *	FG I Electives * (one)	3	-
FG II Electives *	FG II Electives * (two)	6	-
Research/Electives (any department code)	Dissertational Research / Electives	40	-

**Functional Genomics Electives*: Most courses in ANS, BCH, BIT, BO, CBS, CS, CSC, FOR, FS, GN, IMM, MB, PHY, PO, PP, ST, and ZO will be acceptable as *Functional Genomics Electives*. Elective choices must be approved by the Director of Graduate Programs.

In order for the Bioinformatics and Functional Genomics programs to be approved as separate degree programs, a certain number of required courses could not be shared as requirements for the two programs. In order to accomplish this, Functional Genomics Electives were divided into two categories: those that may NOT be in the list of Bioinformatics required courses (*Functional Genomics I electives*), and those that MAY be in the list of Bioinformatics required courses (*Functional Genomics II electives*).

In sum: *Functional Genomics I electives* may NOT be ST 590C, CSC 530, ST 512, ST 501, ST 502, but may be any other elective as described above. *Functional Genomics II electives* may be ANY elective as described above, including those excluded as *Functional Genomics I electives*. Therefore, students will likely be able to select any scientific courses for their *Functional Genomics electives*; they must simply be sure to assign them appropriately as *Functional Genomics I (the restricted category)* or *Functional Genomics II (the unrestricted category)*

ALL DEGREE CANDIDATES MUST TAKE THE GENOMIC SCIENCES CORE COURSES

IX. OTHER RECOMMENDATIONS

1. ATTENDANCE AT SEMINARS

Seminars provide a unique opportunity to hear the latest developments in areas of interest, and therefore students must attend seminars regularly. You will receive email announcing seminars that relate to Genomic Sciences. Please plan on attending all of those that interest you, but certainly at least four to six per year.

2. TRAVEL TO PROFESSIONAL MEETINGS

Student attendance and presentations at professional meetings is an important part of career development. Travel Authorizations forms must be completed before travel to a meeting. Funds for travel may be provided by the student's major professor, grants, fellowships or other sources. In addition, the Graduate Student Association (GSA) travel fund provides money to subsidize students who are presenting papers at professional meetings. GSA funds are available for one meeting per degree. Contact your GSA representative or the GSA travel fund committee chairman for an application and guidelines. The travel fund committee must receive all the application materials before the date of the meeting, and you must save your receipts.

For students whose graduate fellowship pays for travel to professional meetings, travel authorizations are initiated through the home department and must be completed prior to travel. All information on the Travel Authorization form should be completed, except the account information. The Graduate School will complete the account information. Backup information that shows where and when the conference or event is being held and the expenses included in the registration should be attached to the Travel Authorization form. After the Director of Graduate Program signs the Travel Authorization form, it should be forwarded to the Graduate School. If the Fellow would like to receive a travel advance, he or she must complete a travel advance Co-Signer Form and submit it along with the Travel Authorization form, at least three weeks in advance of travel. Do not submit the completed original of these forms to the Graduate School until *after* completion of travel.

The Travel Reimbursement Form should be completed upon return from travel. Be sure to include itemized, original receipts (hotel, airline, parking, taxi, etc.).

X. UNIVERSITY REGULATIONS AND REQUIREMENTS

The Graduate School maintains a web site that includes information on many aspects of graduate studies at NCSU. For current information, consult the site at <http://www.ncsu.edu/grad/>.

1. RESPONSIBLE CONDUCT OF GRADUATE STUDENTS

Student and research integrity is taken very seriously in both the Genomic Sciences Graduate program and at NC State University. As a student in Genomic Sciences you will be expected to uphold these standards. Plagiarism, research misconduct, presenting false information will not be tolerated and will be prosecuted based on their severity. For specific information on research integrity guidelines, what is considered a violation and consequences please visit the following Websites:

- Research at NC State: <http://research.ncsu.edu/sparcs/compliance/integrity/>
- Graduate School RCR: <http://www.ncsu.edu/grad/rcr/index.html>

2. CONTINUOUS REGISTRATION POLICY

NCSU has a continuous registration policy for all graduate students:

“After a student is admitted to the Graduate School and enrolls for the first time, she/he is required to maintain ‘continuous’ registration, i.e., be enrolled each semester, excluding summer sessions, until she/he has either graduated or her/his graduate program at NCSU has been terminated. A student in good academic standing who must interrupt her/his graduate program for good reasons may request a leave of absence from graduate study for a definite period of time, normally not to exceed one year. The request should be made at least one month prior to the term involved. Upon endorsement of the request by the student’s graduate Advisory Committee and Director of Graduate Programs, and approval by the Graduate School, the student would not be required to be registered during the leave of absence. The time that the student spends on an approved leave of absence will be included in the time allowed to complete the degree, i.e., 6 years for Master’s and 10 for the doctoral. Graduate Students whose programs have been terminated because of failure to maintain continuous registration, and who have not been granted a leave of absence, during a fall or spring semester will be required to apply for readmission if they wish to resume their graduate studies at NCSU.”

Note that summer semester registration is not required (unless stipulated by your fellowship or assistantship), but you must be registered each spring and fall semester until graduation or termination. If you are not supported by a stipend that pays at least \$3,000/semester, you may register for as little as one hour. If you are supported by a stipend that pays at least \$3,000/semester, there is a *different set of enrollment requirements* beginning Fall 1997 for both new and continuing students (see page 32).

International students on F-1 and J-1 Visas are required by the USCIS to carry a full-time course of study to remain in status, 9 hours. Upon arrival to campus, International students must contact the Office of International Services, 919-515-2961, for more information and/or policies concerning their entire course of study in the United States.

IMPORTANT: The Graduate School asks that each continuing student register during the pre-registration period. *If you have been granted tuition remission and you do not pre-register, the Graduate School will drop your name from the list of students eligible to receive tuition remission and your tuition remission will be revoked for the same semester.* Also, if for any reason you withdraw from the university during the time you have been granted tuition remission, you will have to repay a portion of the tuition remission funds. You must receive a stipend that pays at least \$8,000/annually to be eligible to receive tuition remission; if for any reason your stipend ends while you are receiving tuition remission, your tuition remission also ends and you will have to repay a portion of the tuition remission funds.

Genomic Sciences Graduate Programs
Ricks Hall

3. FULL TIME VERSES HALF TIME STUDENTS

Full time, according to the graduate school, is equal to nine hours until all course work is completed at which case three hours or more may be considered full time.

Part time, according to the graduate school and to the federal government, is exactly half of full time. At NC State that is 4.5 hours. Keep in mind if you have previous financial loans that to have your loans deferred, you must be a half time student of 4.5 hours. Three hours will no longer count towards this.

4. GRADUATE STUDENT SUPPORT PLAN (Teaching/Research Assistants & Fellows)

NCSU instituted a support plan for graduate students in Fall 1997 that includes requirements for new and continuing students. The plan applies only to students receiving a minimum stipend of \$8,000 annualized. Membership Requirements At-A-Glance are listed below. Please see <http://www.ncsu.edu/grad/support-plan> for detailed information.

		Graduate Student Support Plan (1) Membership Requirements At-A-Glance										
		Number of Semesters from Initial Graduate Enrollment to Current Semester (2)										
		1	2	3	4	5	6	7	8	9	10	>=11
Current Graduate Level		Hours of Registration Required										
Masters (MR)		F*	F*	F*	F*	F*	F*	F*	F*	F*	F*	F*
Doctors (DR)	DR Students who had an MR in the same or related field upon initial enrollment to the Graduate School at NC State	F*	F*	F*	F*	F*	F*	F*	F*	F*	F*	F*
	DR Students who did NOT have an MR in the same or related field upon initial enrollment to the Graduate School at NC State	F*	F*	F*	F*	F*	F*	F*	F*	F*	F*	F*
(1) For Graduate Students currently receiving a minimum stipend (from RA, EA, TA or Fellowship) of \$8,000 annualized.		Benefits-Health Insurance, In & Out of State Tuition										
(2) Fall and Spring term only. Initial enrollment refers to initial enrollment in Graduate School at N. C. State and includes those who go from a Master's degree to a Ph.D. Only semesters actively enrolled are counted. Leaves of Absence are excluded.		Benefits-Health Insurance ONLY										
F* = Full-time at all times												

5. **UNIVERSITY RESIDENCY REQUIREMENT**

Students engaged in a course of study leading to a degree must fulfill a residence credit requirement or you will not be allowed to graduate.

MR/M.S. students are required to be in residence, pursuing graduate work, for a minimum of one full academic year or its equivalent.

Ph.D. students must be in residence at least six semesters beyond the baccalaureate degree.

At least two residence credits must be secured in continuous residence (registration in consecutive semesters) as a graduate student at the University to fulfill this requirement, but failure to take courses in the summer does not break continuity. However, summer course work can be used in partial fulfillment of this requirement. A single summer session is equal to one-half of the corresponding amount for a regular semester. For example, six semester hours carried during a summer session will earn one-third of a residence credit; less than six credit hours will earn one-sixth of a residence credit. If you must take a leave of absence, and you have not accumulated two residence credits, you forfeit all credits obtained thus far and must start over when you return to the university.

Residence credits are determined by the number of credit hours of graduate work carried during a regular semester.

For more information: [http:// www.ncsu.edu/grad/tuition-residency](http://www.ncsu.edu/grad/tuition-residency)

<u>Semester Credits (Hours)</u>	<u>Residence Credits</u>
9 or more	1
6–8	2/3
less than 6 (including registration 590, 690 series)	1/3
Video-based courses (e.g., TOTE and VBEE) are designated on transcripts with "V," and extension courses with "E." Neither V nor E courses can be used to satisfy the semesters-in-residence requirement.	

6. **ACADEMIC DIFFICULTY**

Graduate students may be terminated from a program at any time if, in the judgment of the degree-granting Department and the Graduate School, a student fails to make satisfactory progress toward completion of the degree (regardless of grades). The definition of satisfactory progress toward completion of the degree program may differ among degree offering units. Examples of unsatisfactory progress may include, but are not limited to, inadequate grade point average (GPA), inadequate research and/or research skills, failure to obtain satisfactory grades in required courses for the program, or failing the candidacy, comprehensive, or final oral examination. A GPA of at least 3.00 for all graduate course work at NC State is required for graduation. For more information: <http://www.ncsu.edu/grad/handbook/sections/3.20-academic-difficulty.html#A>

a. Academic Warning

Graduate students are given a notice of academic warning if they have accumulated 18 or fewer hours at the 400-level or above and have less than a 3.0 GPA. Students on academic warning may continue to hold an assistantship or fellowship and receive financial aid.

b. Academic Probation

Graduate students will be placed on academic probation if they have accumulated more than 19 hours at the 400-level or above and have a GPA in the range of 2.67 to 2.99. Students placed on academic probation will be ineligible for financial aid or appointment or reappointment to an assistantship or fellowship.

c. Termination

Graduate students will be terminated from their program of study if they have accumulated more than 18 hours at the 400-level or above and have a GPA below 2.67, or if they have accumulated 30 or more hours and have less than a 3.00 GPA. A student may also be terminated for violation of the NC State Student Code of Conduct or upon recommendation by the Department if the student is not making satisfactory progress toward the degree as determined by departmental guidelines.

d. Reinstatement

Under extenuating circumstances, the Director of Graduate Programs may recommend and provide justification to the Dean of the Graduate School to reinstate a student's graduate classification. This recommendation must be in writing and must be signed and approved by the advisory committee and the Director of Graduate Programs or the Department Head before the Graduate Dean will consider it. It should include a reasonable schedule for achieving the 3.0 average.

Students must have a cumulative GPA and a Plan of Work GPA of at least a 3.0 to graduate.

XI. APPENDIX

*Appendix A***ESTABLISHING NORTH CAROLINA RESIDENCY FOR TUITION PURPOSES
FOR GRADUATE STUDENTS**

Please complete the necessary steps to become a resident of North Carolina within the first 10 days of living in North Carolina.

Establishing North Carolina Residency for Tuition Purposes for Graduate Students Please see <http://www.ncsu.edu/grad/tuition-residency>. The Graduate School has requested that all graduate programs delete their versions of Residency Requirements from handbooks and web pages, and instead refer students to the above web link. This is in the interest of providing the most accurate and up-to-date information to students.

*Appendix B***MEMBERSHIP IN THE GRADUATE FACULTY**

Committee Chairs/Major Graduate Advisors and Graduate Advisory Committee members must be members of the NCSU Graduate Faculty. A professor may be approved as an Associate Graduate Faculty member or as a Full Status Graduate Faculty member. Associate members may chair master's advisory committees and serve on master's and doctoral advisory committees. Associate members may co-chair doctoral committees as long as the chairman holds Full Status. Graduate Faculty members can also represent several departments. When filling out the Advisory Committee form, please remember to designate the department/program the professor is representing.

A Professor can be a University Faculty member and still not be a member of the Graduate Faculty. It is the student's responsibility to be sure each member of his committee is a Graduate Faculty member.

Appendix C

Tips for selecting a Committee Chair/Major Advisor

The selection of a Committee Chair/Major Graduate Advisor is one of the most important decisions that will be made in your graduate program. Each advisor and student is unique and has their own particular strengths and weaknesses as well as style of operation and interaction. The goal of the laboratory rotations is to identify advisors who will provide the training environment that the student desires and needs to reach their degree goals. These rotations are an excellent opportunity to gain first-hand information on specific programs. Some tips for gaining the information you need to make your decision are listed below:

- Ask questions of current technicians, postdoctoral researchers and senior graduate students in the laboratory. They are extremely valuable sources of information and often are instrumental in getting a project started. However, do not choose a laboratory based solely on these individuals, since most will move on before you finish your degree.
- Ask to see copies of recent publications and current grant proposals and read them.
- Ask for specific information on current projects in the laboratory and possible projects for new students.
- Find out about the advisor's management style. Some faculty members like to have weekly progress reports and planning sessions, while some meet much less frequently with their students. You should be aware of how much direct contact you can expect.
- Find out about graduate students that have been in the laboratory before you, and what types of positions they are in now. Inquire about current students, when they expect to graduate and how many new students may enter the laboratory.
- Ask about long planned absences such as sabbatical leaves. This should not affect your decision to join the laboratory, but be aware that it will affect the planning of projects and committee meetings.

If you are not satisfied with your three rotations, inquire about doing more. A few extra months spent in the beginning are much better than ending up somewhere where you are not happy.

We strongly encourage you to discuss your lab rotation plans with the Director of Graduate Programs. Your choice of advisor is the most important decision you will make in your graduate training program!

*Appendix D***GRADUATE SCHOOL POLICIES PERTAINING TO GRADUATE STUDENT RIGHTS AND RESPONSIBILITIES (approved 07/1/2003)**Introduction

“(1) The University of North Carolina affirms that the first goal of each constituent institution is to educate the students admitted to its programs. The freedom of students to learn is an integral and necessary part of the academic freedom to which the university and its constituent institutions are dedicated. Each constituent institution shall provide, within allotted functions and available resources, opportunity for its students to derive educational benefits through developing their intellectual capabilities, encouraging their increased wisdom and understanding, and enhancing their knowledge and experience applicable to the effective discharge of civic, professional, and social responsibilities. No constituent institution shall abridge either the freedom of students engaged in the responsible pursuit of knowledge or their right to fair and impartial evaluation of their academic performance

(2) All students shall be responsible for conducting themselves in a manner that helps to enhance an environment of learning in which the rights, dignity, worth, and freedom of each member of the academic community are respected.

(3) In applying regulations in the area of student discipline, each constituent institution shall adhere to the requirements of due process as set forth in Section 502 D(3) of this Code.”

The above document is the introduction to the Graduate School Policies Pertaining to Graduate Student Rights and Responsibilities. You may view the entire document at

http://www2.unca.edu/aa/handbook/Tenure_Pre_8_2003/13.htm Also see, <http://studentconduct.ncsu.edu/student-rights-and-responsibilities>.