Integrated Bioscience Ph.D. Program

2021 – 2022 Program Handbook

PREFACE

Revised 10/2021

The purpose of this handbook is to provide a point of reference to doctoral students, faculty, staff, research mentors, and the NCCU community for all matters regarding the Doctor of Philosophy (PhD) in Integrated Biosciences (INBS) program. This handbook is designed specifically for PhD students within the Integrated Biosciences Program and does not replace or preempt the information provided by the University or the School of Graduate Studies except where specified. **All INBS students are responsible for being informed about all academic and research requirements.** The INBS Director, INBS faculty members, and INBS Program Associate are available for advice, guidance and consultation regarding all requirements, policies, and procedures. This document is mainly focused on program rules, regulations and guidelines for the PhD program. It is the responsibility of the student to stay informed by asking questions and attending information sessions in order to advance effectively in the program.

All revisions, corrections and changes are the responsibility of the Director of the INBS PhD Program, INBS Ph.D. Advisory Committee, members and Research Mentors. The guidelines within this document are current at the time of printing but will be updated as deemed necessary.

Printed guides will be available upon request until documents are updated online.

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Doctor of Philosophy Degree in Integrated Biosciences

INBS Program Office

The Integrated Biosciences PhD Program office is located in room 1203 of the Mary Townes Science Complex at 1900 Concord Street Durham NC 27707. The student office is located in room 2238 of the Mary Townes Science Complex.

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The Integrated Biosciences PhD Program office is equally governed by the Interim Dean of the College of Health and Sciences, Dr. La Verne Reid and the Dean of Graduate Studies, Dr. Jaleh Rezaie.

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Program Overview

Mission

The Doctor of Philosophy (Ph.D.) degree in Integrated Biosciences program at North Carolina Central University (NCCU) specifically addresses complex issues associated with the pervasiveness of diseases that contribute to an unequal health burden in underrepresented populations, known commonly as health disparities. Through the application of an amalgamation of principles from biology, biomedical and behavioral sciences, chemistry, bioinformatics, environmental sciences, and pharmaceutical sciences, the INBS Program will train and mentor students using cross-disciplinary contributions to solve complex problems for the well-being of underrepresented populations.

Goals

The principal goal of the Integrated Biosciences PhD program is to effectively train students to solve complex problems using concepts in biology, biomedical, chemistry, physics, bioinformatics, and pharmaceutical sciences. Additional goals of the PhD program are to:

- Prepare students to investigate biologically relevant research questions through the mastery of physical, mathematical, computational, informational and biological sciences;
- Increase the number of scientists who are prepared to meet and address the research questions impacting the health needs of the community;
- Create the next generation of qualified biomedical scientists and faculty specializing in health disparities and drug discovery research;
- Enhance career opportunities for students through the development of a multidisciplinary and integrated biosciences program.

Program Learning Outcomes

Upon completion of this program, students will graduate with a **doctoral degree in Integrated Biosciences** and will demonstrate the ability to:

- Critique and assess recent advances in a specialty research area within biomedical or pharmaceutical sciences;
- Propose and conduct multidisciplinary hypothesis-driven research in biomedical or pharmaceutical sciences;
- Investigate complex biological questions with appropriate technologies; and
- Identify and assess the presence of health disparities in a disease system.

Integrated Biosciences Faculty

The Integrated Biosciences Program includes faculty members with a variety of expertise to ensure the integrity of the program, courses, and research. Program faculty members bring perspectives and backgrounds from different disciplines and departments to complement each other and form a strong foundation for current and innovative programming. INBS Program Faculty selected are graduate level faculty members who are responsible for:

- the teaching, mentoring, and research training of doctoral students,
- designing and teaching the academic content of doctoral courses and
- supervising the written and oral portions of the Qualifying Exam as well as the final dissertation.

INBS faculty are directly involved in the PhD program and possess extensive and diverse backgrounds in teaching graduate courses, advising and mentoring graduate students in the research lab, success in securing federal and private grant funding, and publishing in refereed journals.

There are **two categories of INBS PhD Program Faculty: teaching faculty and research mentors**. Both research mentors and teaching faculty for the PhD program may teach courses numbered 8000 or above and/or serve on dissertation and examining committees. However, only research mentors who have an active research program at NCCU or at an affiliate of NCCU may chair dissertation committees (i.e. serve as the primary advisor for students). All INBS teaching faculty and research mentors will be potentially reviewed in 5-year cycles. Exceptions will be considered on a case by case basis by the Ph.D. Director. Research mentors who have an affiliation with NCCU must receive approval from the INBS PhD Program Director before becoming chair of a dissertation committee.

Integrated Biosciences Program Director

The Director of the INBS Ph.D program is a faculty member who oversees the program and ensures academic excellence in and successful matriculation of students throughout their time at NCCU. The Director chairs the Integrated Biosciences Committee to assure that the goals and objectives of the program are met. The Director assists doctoral students with achieving academic excellence, professional development and completion of the program by serving as students' first year advisor.

Integrated Biosciences Program Associate

The Associate of the INBS PhD Program shall provide assistance to the director as needed. The Associate will act as liaison between the Director and students and will advise and facilitate tasks as needed with relation to the success of the INBS PhD students, INBS PhD program, and the University as a whole.

The Integrated Biosciences Committee

The Committee is composed of seven voting members: the INBS Program Director and one faculty representative from the participating departments of Biological & Biomedical Sciences, Chemistry & Biochemistry and Pharmaceutical Sciences, and three (3) at-large members elected by the INBS Program faculty. No more than two (2) at-large members can be from the same academic department. The Dean of the College of Health & Sciences and the Dean of the Graduate School, as well as the three Department Chairs, are invited to attend meetings but are not members of the INBS Committee.

The responsibilities of the Integrated Biosciences Committee include the following:

a. Contribute to PhD program growth and development
b. Review student applications and make selections for interview
c. Interview applicants invited for campus visits and help set program visit agenda
d. Review, evaluate, and recommend tenure/tenure track faculty to INBS program faculty
e. Annual review and evaluation of INBS students
f. Contribute to program policy and rules development
g. Recommend teaching assignments for program faculty
h. Make recommendations for program curricular and policy changes

Doctoral Level Education – Student Progression

The Doctor of Philosophy Degree in Integrated Biosciences at NCCU is a research degree. The degree is awarded on the basis of achievement in a wide range of course work; the qualifying/comprehensive examination (written and oral); intensive research experience during which the candidate demonstrates ability to initiate, perform, and

analyze original academic research; a written dissertation; and defense of the dissertation through a final oral examination. Since this is a brief overview, more details on these aspects of the program will be discussed below.

INBS Academic Program

This program provides students from varying degree discipline backgrounds with a comprehensive approach to addressing research questions. Students may choose from one of two (2) tracks - **Biomedical Sciences** and **Pharmaceutical Sciences**. The biomedical sciences concentration is designed for students with backgrounds and interests in biology, biochemistry, chemistry or related disciplines. The pharmaceutical sciences concentration is designed for students with backgrounds and interests in pharmaceutical sciences, pharmacology, biochemistry or related disciplines. **Student may take courses from either track, but a track must be declared and the required track courses must be taken from the declared track**. All students will participate in a unique core curriculum consisting of responsible conduct in research, communication and problem solving, and research techniques to address hypothesis driven research questions.

PhD Curriculum

The PhD in Integrated Biosciences program will, on average, be completed in approximately 5 years but cannot exceed 7 years. The composition of the program is a minimum of 75 credit hours consisting of:

- 12 credit hours of core curricula courses,
- 11 credit hours of additional required courses;
- 6 credit hours of Track courses and 3 credit hours of electives (per approval by research mentor and INBS program director);
- A minimum of 46 credit hours of research courses to include:
    - 2 credit hours of Research Lab Rotations,
    - 9 credit hours of doctoral supervised research;
    - a minimum of 32 credit hours of doctoral dissertation research; and
    - a minimum of 3 credit hours of dissertation preparation.

Students are required to do 2-3 lab rotations. Exceptions to the rotation policy will be made on a case-by-case basis. **All courses taken for the PhD degree must be at the 8000 level or above unless otherwise approved by the students' Research Mentor and the Program Director.**

<u>Course work from a previous graduate program, completed within five years of admission to the INBS Program, will be considered as transfer credit to apply to satisfying the required 75 credit hours for graduation from the INBS Program. Acceptance or waiver of required core and/or elective courses will require approval by the INBS Director and INBS Committee. A maximum of 15 credit hours will be accepted and/or waived.</u>

An Individual Development Plan of study must be developed by the student in consultation with his/her research mentor and the INBS Program Director.

PhD CORE COURSES (12 cr)

BIOD8005 or CHMD 8000 Advanced Biochemistry (3)
BIOD 8010 Advanced Cell Biology (3)
BIOD 8075 Intermediate Biostatistics (3)
BIOD 8020 Advanced Integrated Genetics (3)

Additional Required Courses (8 cr)

INBS 8000 Health Disparities (3)

INBS 8100 Multidisciplinary Problem Solving (Grant/Proposal writing course) (3)
INBS 8700 Graduate Seminar in Integrated Biosciences I (1)
INBS 8710 Graduate Seminar in Integrated Biosciences II (1)
Responsible Conduct of Research/ Research Ethics- Summer online workshop

Example of TRACK COURSES

Biomedical Sciences Track Courses Selection List:
BIOD 8060 Advanced Neuroscience (3)
BIOD 8080 Advanced Physiology (3)
BIOD 8040 Advanced Toxicology (3)
BIOD 8xxx Advanced Virology (3)
BIOD 8610 Selected Graduate Topics (3)
CHMD 8100 Protein and Enzyme Biochemistry (3)

Pharmaceutical Sciences Domain Courses Selection List:
PHRD 8000 Pharmacology (3)
PHRD 8100 Drug Discovery (3)
PHRD 8130: Enzyme Kinetics (3
PHRD 8140: Advanced Methods in Protein Chemistry (3)

ELECTIVE COURSES

Eligible courses are 8000 level courses in Biological & Biomedical Sciences (BIOD 8XXX), Chemistry & Biochemistry (CHMD 8XXX), and Pharmaceutical Sciences (PHRD 8XXX). Additional courses available from Duke University, NC State or UNC Chapel Hill through the Inter-institutional program may also be used. Selections should be made with approval from the Program Director and the research advisor and should not be offered at NCCU during the same semester.

RESEARCH COURSES (minimum 46 cr)

Research courses are taken at different levels.

- Prior to the student assignment to a research lab – INBS 8800 and INBS 8810 Research Rotation (2 cr minimum)
- Summer registration only- INBS 8940- Summer Dissertation Research
- After assignment to research lab - INBS 8930 Doctoral Supervised Research (9 cr minimum),
- After successful completion of the Qualifying Exam and Advancement to Candidacy - INBS 8950 Doctoral Dissertation Research (32 cr minimum)
- Last semester of study – INBS 9000 Dissertation Preparation (3 cr minimum).

Requirements for the Ph.D. Program in Integrated Biosciences (INBS)

1. A cumulative grade point average of 3.0 or higher is required to remain in good academic standing. If the student is not in good academic standing, financial support may be suspended or reduced for a probationary period.
2. A grade of “B” or better must be earned in all required core and track courses. If a grade of “C” is earned for any course, it must be repeated to replace the grade of “C”.
3. A minimum of 75 credit hours of programming are required: 23 credits of program required coursework, 6 credits of track courses, 3 credits of electives, and 46 credits of research courses consisting of: 2 credits

lab rotations, 9 credits of Doctoral Supervised Research, 32 credits of Doctoral Dissertation, and 3 credits of Dissertation Preparation.

4. Advancement to Candidacy following successful completion of a two-part Qualifying Examination consisting of a written section and an oral exam is required. Details are provided in PhD student handbook on passing.
5. **It is required that at least one first-author manuscript from the dissertation research be submitted or accepted to a professional journal in the field of study. The student must provide the email confirmation of manuscript submission, from the journal, to the INBS office before the dissertation defense is scheduled.**
6. Successful completion of the dissertation including a public oral defense and approval by the research mentor and dissertation committee.

Additional Requirements

All PhD students are required to participate in professional development opportunities offered throughout the year as well as attend bi-monthly student meetings. From time to time, there will be events for PhD students where your participation is expected and other events will require your attendance. You will be notified in advance when the functions are announced.
All students are required to complete an Individual Development Plan (IDP) and discuss progress with your Research Mentor and/or Program Director. The Individual Development Plan (IDP) concept is commonly used to help candidates define and pursue their career goals.

Financial Support

It is the goal of the INBS PhD Program to provide the following forms financial support to all enrolled students:

1. All tuition and fees for all enrolled classes including any interinstitution courses. For US citizens, in-state tuition only will be provided following year 1 of the program. Students are excepted to establish in-state residency by the end of year 01 of the program.
2. Full payment of the cost of the Student Blue BCBS Health insurance
3. A monthly stipend for the first 24 months of enrollment, which may be extended to 36 months at the discretion of the program.
    a. Students that do not have funding in the form of Research Mentor support or outside grant support will be required to teach during their fourth and fifth year to receive their monthly stipend.

Students unable to be supported by their Research Mentor's outside grant, and are unable to teach, will be addressed on a case-by-case basis.

PH.D. IN INTEGRATED BIOSCIENCES PLAN OF STUDY

YEAR 1			
FALL SEMESTER		**SPRING SEMESTER**	
BIOD8005/CHMD 8000 Biochemistry	3	INBS 8000 Health Disparities	3
BIOD 8020 Advanced Genetics	3	BIOD 8010 Cell Biology	3
INBS 8700 Graduate Seminar I	1	INBS 8710 Graduate Seminar II	1
INBS 8800 Laboratory Rotation I	2	INBS 8810 Laboratory Rotation II	2
SUMMER 1:			
INBS 8940 Doctoral Dissertation Summer	3		
YEAR 2			
FALL SEMESTER		**SPRING SEMESTER**	
BIOD 8075 Biostatistics	3	INBS 8930 Doctoral Supervised Research	3
DDDD 8XXX Track Course *	3	DDDD 8XXX Track Course*	3
INBS 8930 Doctoral Supervised Research	3	INBS 8100 Problem Solving	3
SUMMER 2:			
Qualifying Examination (Written and Oral); June-August			
INBS 8940	3		
YEAR 3			
FALL SEMESTER		**SPRING SEMESTER**	
DDDD 8XXX Electives	3	INBS 8950 Doctoral Dissertation Research	9
INBS 8930 Doctoral Dissertation Research	6		
SUMMER 3:			
INBS 8940 Doctoral Dissertation Summer	3		
YEAR 4			
Doctoral Dissertation Proposal to Doctoral Committee beginning of Year 4 Spring semester			
FALL SEMESTER		**SPRING SEMESTER**	
INBS 8950 Doctoral Dissertation Research	9	INBS 8950 Doctoral Dissertation Research	9
SUMMER 4:			
INBS 8940 Doctoral Dissertation Summer	3		
YEAR 5			
FALL SEMESTER		**SPRING SEMESTER**	
INBS 8950 Doctoral Dissertation Research	9	INBS 8950 Doctoral Dissertation Research	6
		INBS 9000 Dissertation Preparation	3

PhD in Integrated Biosciences Course Descriptions

INBS 8000 Health Disparities in Human Disease (3). This course provides theoretic and translational tools to prepare students for problem-solving and research in reducing health disparities. The course examines disparities in health and health outcomes for and among racial/ethnic groups and subgroups. The course includes review and debate of social, political, economic, cultural, biological, legal and ethical theories related to health disparities from historical and current perspectives in the United States. The course involves inquiry into health disparities through critical review of diverse evidential data sources, scientific research reports, and assessments of intervention practices. Students synthesize the knowledge and information on health disparities gained through the course and integrate their learning by presenting realistic study designs for health disparities research.

INBS 8100 Multidisciplinary Problem Solving (3). This course engages students in problem-solving methodologies from multiple scientific disciplines, including health disparities. This course is structured for team-based learning and promotes team interaction and integration of multidisciplinary approaches to solving problems in science. Students conduct an extensive review of the literature and write a research proposal different than their dissertation research project. The written proposal is reviewed by course faculty in a Mock NIH Review panel setting.

INBS 8700 Graduate Seminar in Integrated Biosciences I (1). This course is the first of a two-part seminar series which develops core skills of inquiry for approaching modern scientific research for first-year doctoral students. The two-part seminar series provides to students continually updated information on current research related to health disparities, methods for interpreting and critiquing scientific literature, exercises in problem identification and idea generation, and techniques for presenting research data and findings in oral formats for professional meetings and written formats for peer-reviewed publications. In the first part of the series, students critically analyze, lead discussions, and make presentations on selected research literature. In the second part of the series, students prepare and present a research poster and give a seminar in a scientific meeting format on work from their engagement in research rotations or supervised research.

INBS 8710 Graduate Seminar in Integrated Biosciences II (1). Prerequisites: INBS 8700. Continuation of INBS 8700. This course is the second of a two-part seminar series which develops core skills of inquiry for approaching modern scientific research for first-year doctoral students. The two-part seminar series provides to students continually updated information on current research related to health disparities, methods for interpreting and critiquing scientific literature, exercises in problem identification and idea generation, and techniques for presenting research data and findings in oral formats for professional meetings and written formats for peer-reviewed publications. In the first part of the series, students critically analyze, lead discussions, and make presentations on selected research literature. In the second part of the series, students prepare and present a research poster and give a seminar in a scientific meeting format on work from their engagement in research rotations or supervised research.

INBS 8800 Research Rotation I (2). Prerequisites: None. This course is the first of a two-semester laboratory rotations sequence for first-year doctoral students in the Integrated Biosciences (INBS) PhD program. This is a research laboratory course in which students pursue research projects of limited scope, 8-weeks at a time, under the supervision of an INBS faculty member. Up to three research rotations may be completed by first-year students during the first two semesters of their program of study. During the first part of the first semester course, doctoral students are introduced to INBS research faculty and their research through presentations and laboratory visits. Students select the research and laboratories through which they will rotate and they complete their first rotation during the last part of the first semester course. Up to two additional research rotations are completed by the students during the second semester course. This course is offered on a Pass/Fail basis.

INBS 8810. Research Rotation II (2) Prerequisites: INBS 8800. Continuation of INBS 8800. This course is the second of a two-semester laboratory rotations sequence of in which doctoral students pursue research projects of limited scope, 8-weeks at a time, under the supervision of an INBS faculty member. This course is a research laboratory course for doctoral students in the Integrated Biosciences PhD program. This is a required course for first-year graduate students in the Integrated Biosciences doctoral program, and consists of an 8-week research project of limited scope pursued under the supervision of an INBS faculty member. Up to three research rotations may be completed by first-year students during the first two semesters of their program of study. This course is offered on a Pass/Fail basis.

INBS 8930 Doctoral Supervised Research (1-9). This course involves directed research under the guidance of a member of the Integrated Biosciences (INBS) program faculty prior to the student being admitted to candidacy for the PhD degree. Students will perform advanced research and hone research skills toward identification of a dissertation project. This course is offered on a Pass/Fail basis.

INBS 8940 Doctoral Dissertation Summer (3). This is a summer non-billable research course for students in the summer sessions. This course is graded on a Pass/Fail basis.

INBS 8950 Doctoral Dissertation Research (3). This course involves dissertation research under the mentorship of a member of the Integrated Biosciences (INBS) program faculty after the student has been admitted to candidacy for the PhD degree program. Students will conduct research in their field of study related to their dissertation project. This course is offered on a Pass/Fail basis.

INBS 9000 Doctoral Dissertation Preparation (1-3). This course is for PhD candidates who have completed all requirements for the doctoral degree except the dissertation defense, including credit hour requirements, preliminary examination, residency requirements, and dissertation research. PhD candidates registering for this course are those who are writing their dissertation and preparing to defend their dissertation. This course is offered on a Pass/Fail basis.

BIOD 8010 Advanced Cell Biology (3). This course will provide an overview of principles of Cell Biology, exploring the structure and function of nucleic acids and proteins, the function of cellular organelles, and the molecular basis of cell signaling. The use of recent scientific literature will be used to illustrate important concepts in Cell Biology.

BIOD 8060 Fundamental Neuroscience (3). This course will provide an overview of fundamentals of neuroscience, exploring the anatomical organization of the nervous system, cell biology of the nervous system, developmental neurobiology, and function of sensory, motor and autonomic nervous systems.

BIOD 8075 Intermediate Biostatistics (3). This course is an analytical statistics course designed to provide an advanced knowledge of statistical applications in biological research. Statistics, including analysis of variance, correlation, and regression analysis, followed by introduction of advanced topics such as multivariate analysis of variance, analysis of covariance, factor interaction analysis, and more advanced regression analysis will be covered in this course. Students will gain experience in written and oral communication of statistics, and critical evaluation of statistical approaches to biological and pharmaceutical research problems.

BIOD 8040 - Advanced Toxicology (3)

This course is designed to provide instruction on the toxic effects of chemicals and xenobiotic in biological system, with emphasis on humans. The course lectures, discussions, and presentations follow a system-based approach of

a toxicant moving through the anatomy, physiology, and pharmacology of the target organ systems. Risk assessment and evaluation of toxicity data derived from in vivo and in vitro studies are also covered in this course.

BIOD 8080 - Graduate Physiology (3)
Prerequisites: BIOD 8010 - Advanced Cell Biology (3) This course is designed as an MD/PhD-level course for Biology and Pharmaceutical Sciences. The course is intended to focus mainly on cellular and molecular aspects of physiology, but will address also pathophysiology. The instructors will provide instruction on the physiology of the nervous, cardiovascular, gastrointestinal, and endocrine systems. In addition, the instructors discuss with students ongoing research in their laboratories in the aforementioned disciplines.

BIOD 8xxx- Advanced Virology (3)
This course will provide an overview of principles of Virology, exploring complex interaction between virus and hosts, modes of transmission, barriers to infection, immune response, anti-viral treatments and prevention strategies of human viruses. A major component of this course focus is evaluating modern virology scientific publications.

BIOD 8610- Selected Graduate Topics (3)
Prerequisite: BIOD 8010 or instructor approval. Selected graduate topics will provide graduate students in the Integrated Biosciences program opportunities for in-depth exploration of recent and actively developing areas of biological and biomedical sciences. Current primary literature sources related to the particular topic will supplement the content base for each offering. Student participation will include written and oral presentations. (Course may be repeated for credit depending upon sections).

BIOD/CHMD 8000 Biochemistry (3). This course provides a study of structure of biomolecules including proteins, nucleic acids, carbohydrates and lipids; and function of biomolecules including metabolic pathways and bioenergetics and storage and transfer of genetic information (from genes to proteins: replication, transcription, translation).

PHRD 8000 Pharmacology (3). This course covers general principles of pharmacology and drug therapy in humans. This course provides an introduction to pharmacokinetics, drug absorption, distribution, metabolism, excretion and toxicity. This course also incorporates in-depth studies of the principles of neuropharmacology and cardiovascular pharmacology, as well as case studies of anti-inflammatory, antibacterial and anti-cancer drugs.

PHRD 8100 Drug Discovery (3). This course will provide an overview of the fundamental processes and scientific approaches involved in early phase drug discovery as practiced in the pharmaceutical industry. Major classes of drug targets including kinases, G-protein coupled receptors, proteases and nuclear receptors will be introduced in detail. Topics related to target identification/target validation, screening technologies, and medicinal chemistry/chemo-informatics approach to drug optimization will be discussed.

PHRD 8240 - Assay Technologies (3)
This course is an introduction to a broad range of assay technologies and methods used in basic research, drug discovery and development, biomanufacturing, biotechnology and diagnostics. The basic principles and applications of a variety of commonly used assay technologies will be covered. Topics covered include prompt and time-resolved fluorescence, ELISA, quantitative PCR, AlphaScreen technology, FLIPR technology, and cell-based assays.

PHRD 8210 - Cloning and Expression (3)
This course covers key concepts and techniques in both prokaryotic and eukaryotic molecular biology and biotechnology. During lectures, various expression systems including prokaryotic, mammalian, plant, insect cell and yeast expression systems are introduced. Criteria for commercial expression of pharmaceutical proteins, and expression of foreign genes in whole animal systems will be discussed.

PHRD 8250 - Advanced Concepts in Metabolic Diseases (3)
This course explores in-depth the pharmacological, molecular and biochemical basis that underlie major metabolic disorders including hypothyroidism, cancer, Alzheimer's disease, diabetes, atherosclerosis, obesity, and metabolic syndrome. The course consists of lectures, case studies, and discussions.

PHRD 8150 - Biosensors and Nanotechnologies: Theories and Biomedical Applications (3)
This course will teach the theory and application of biosensors and chemical sensors in biomedical applications. Concepts of chemical and biological sensing molecules and methods will be explored. Principles of sensing elements in a variety of applications (glucose monitoring, gas sensing and toxicity, disease, DNA detection) will be examined and principles of nanotechnology will be discussed to familiarize students with miniaturized biological and chemical sensors.

Academic Standing and Satisfactory Degree Progress

The university's requirements for satisfactory degree progress for graduate students are found in the Graduate Student Catalog. Additional requirements for the INBS PhD degree program:

i. Students are required to pass all courses in which they are enrolled.
ii. A minimum grade of "B" is required in all courses. Any courses with a grade of "C" must be repeated.
iii. Students who receive more than one grade of "C" can be dismissed from the Integrated Biosciences PhD Program.
iv. A minimum GPA of 3.0 is required to remain in good standing in the PhD program.
    a. The student's GPA will be computed for the degree based on grades in all graduate courses since first enrollment in the program.
    b. **Students receiving below a "C" in a course can be dismissed from the Integrated Biosciences PhD Program.**
    c. Students whose GPA falls below 3.0 are considered to be on **academic probation**. Students may not be on academic probation longer than one semester or this will be grounds for dismissal from the program. In all cases of academic probation, students may lose scholarship, tuition and fees support.
    d. Students on academic probation will not only need to increase the GPA to the minimum of 3.0, but also be reassessed by the INBS Advisory Committee as to be fit for the program and if or how they will proceed in the program.
v. Research is a significant part of the program. Students failing to make adequate progress in their research can also be dismissed from the program. If a student is unable to identify a research advisor to conduct their dissertation research, this is cause for dismissal from the program. Progress will be determined by recommendations from the research advisor, dissertation committee, and INBS Committee evaluations.

Students not making satisfactory degree progress according to the INBS Graduate Committee are subject to dismissal.

Continuous Full Time Enrollment

Once admitted to a PhD program, students must be registered as a full-time student (9 credits) every fall and spring term until their candidacy is approved, unless they are taking an official leave of absence. Please refer to

the School of Graduate Studies website for specific procedures for requesting an official leave of absence: Graduate Studies General Information.

Students pursuing a PhD degree must be continuously enrolled for research credit (INBS 8930, INBS 8940 or INBS 8950) from selection of research lab until the dissertation is accepted. This rule applies to both the pre- and post-candidacy periods. Students must also meet or consult annually (Appendix: Annual Committee Approval Form) with their PhD Advisory Committee. Any exception to this continuous enrollment or meeting requirement must be discussed with and approved by the research mentor, INBS Ph.D. Program Director, PhD Advisory Committee, and Graduate School prior to any interruption in studies.

Academic Advising

The University Program Associate for the INBS PhD Program will serve as the students' point of contact for academic advising and registration in the first year of the program. Students will meet with University Program Associate during registration periods to discuss course registration, choices for laboratory rotations, and other academic matters. Students are required to meet with the Program Director and INBS Committee annually to discuss ongoing course and research progress and formulate plans for acceptable academic progress. Once the student selects a research lab, their research mentor will serve as their academic advisor and will provide the student their registration Pin to allow registration. The University Program Associate will process any course overrides due to registration errors.

Research Advising

It is the goal of the INBS PhD Program that all students identify a mentor, obtain outstanding research training and complete their PhD requirements in a timely fashion. In order to facilitate a good training relationship, both student and advisor are encouraged to read and adhere to the principles outlined in the Research Mentor Contract.

Selection of a Research Mentor

Doctoral students must become aware of the research programs of individual faculty members during their first year of doctoral studies. Rotating through research laboratories and discussions with the program faculty are the primary manner of getting to know a lab. Students are required to complete one to two semesters of lab rotations consisting of a minimum of three rotations total before selecting a Research Mentor and lab. Students may be granted exemption from the second semester of research rotations on a case-by-case basis, with approval from the Program Director. The resources and research productivity of the laboratory, the likelihood of continued stipend support, and mutual research interest are factors to consider when selecting a research mentor. Successful research progress is dependent upon strong mentor-advisee relationships and as such no student is guaranteed a position in any research lab or a particular research lab. Doctoral students must have selected their Research Mentor by start of the second academic year, but are encouraged to have selected their dissertation advisor by the end of Spring semester in the first year of study. Students failing to secure a research lab must consult the Program Director immediately. Failure to do so could result in termination of the program. The doctoral student's selection of Research Mentor must be approved by the INBS Program Director and INBS Committee. Completion and submission of a signed Research Advisor Commitment form (Appendix) is facilitated by the INBS PhD Program Director. A formal discussion will be scheduled with each first-year student and their selected Research Mentor upon commitment to the lab. This formal discussion will establish reasonable expectations of the Research Mentor and the student during the research progress. Both parties accept the expectations laid out in the Research Advisor Commitment upon joining the research lab.

If at any point a student chooses to leave a lab, or if the student and faculty advisor mutually agree that the student would be better served in another laboratory, the student will be permitted to find another Research Mentor and dissertation lab. The decision should be communicated to the INBS PhD Program office. The INBS PhD Program Director will aid the student as much as possible in finding a new lab. The student must secure a new lab within one month and sign a new Research Advisor Commitment or be subject to possible dismissal from the program. A student who changes labs must form a new dissertation committee and present a dissertation proposal within a timely fashion after joining the new lab with consultation from the INBS PhD Program Director. Changes in the student's Research Mentor and lab does not constitute automatic extension of time to complete the program nor does it automatically extend the funding period. This is addressed on a case by case basis.

On the rare occasions after a Research Mentor has been selected, it becomes necessary to make changes, including the extreme condition of terminating the Student-Research Mentor relationship. If a Research Mentor is dissatisfied with the progress and/or direction of a student's research effort, he or she should make every effort at an early stage of the dissatisfaction to communicate to the student and the INBS PhD Program office the concerns. If the deficiencies persist, the Research Mentor should identify to the student in writing, with the INBS PhD office in copy, of the unsatisfactory aspects of the student's research performance. Reasonable time (at least 30 days) shall be provided to the student to correct the deficiencies and the student will be on probation. If the deficiencies are corrected within the probationary period, the Research Mentor should notify the student in writing that he/she is no longer on probation. If the deficiencies persist at the end of the formal probationary period, it is the prerogative of the Research Mentor to terminate the Student-Research Mentor relationship. The student must secure a new lab within one month and sign a new Research Advisor Commitment or be subject to possible dismissal from the program.

Forming a Dissertation Committee

Students and their research mentors will select a committee of three to four faculty members who have the expertise to direct the student's research and provide expertise on to further progress of dissertation research. At least two of the committee members (including the chairperson and advisor) must belong to the Graduate Faculty, and one member must be from a different department than the research advisor. **At least one committee member is expected to be an external faculty member in service to a research institution other than NCCU.** The committee will be selected prior to the end of the second year and before the qualifying exam. Committee composition is subject to approval by the INBS Graduate Committee and documentation must be submitted to the Graduate Council. Timely submission of the external committee member's faculty application for approval, prior to the qualifying exam or 1st committee meeting (whichever is earliest), is the responsibility of the student and the Research Advisor.

Refer to Appendix - Dissertation Committee Selection and Dissertation Committee Selection Form.

Candidacy for the PhD Degree

Admission to Candidacy for the PhD degree is granted when the student has passed the Qualifying Examination (both Written and Oral sections). Qualifying Examinations are scheduled during the summer after the student has successfully completed the required course work, typically after the second year of doctoral study.

Qualifying Examination

The purpose of the qualifying examination is to assess the student's mastery of foundational knowledge and to assure that the student has the specialized knowledge and skills that will be required for the successful development of a dissertation proposal and subsequent research. The Research Mentor is indirectly involved in the preparation of the PhD student advisee for the qualifying examination. These responsibilities are consistent

with the commitment the Research Mentor made in agreeing to supervise the student. All INBS core course requirements must be satisfactorily completed before the qualifying examination. The Qualifying Examination is comprised of written and oral sections and will be graded on a Pass or No Pass scale. Students who receive a grade of No Pass will receive feedback on areas of weakness, and will be permitted to retake the exam (see details on retakes below). Those who fail to pass the exam retake as specified will be dismissed from the PhD Program

Comprehensive Exam Schedule

Milestones	Due Date	Grading Time	Grade Reported
Written Proposal 1st submission	1st Fri in Aug	3 weeks	Last Fri in Aug
Written Proposal 2nd submission	1st Fri of Oct	3 weeks	Last Fri in Oct
1st Oral Defense	1st Fri of Oct	-	1st Fri of Oct
2nd Oral Defense	Friday before Thanksgiving	-	Friday before Thanksgiving

Qualifying Exam Committee

The Research Mentor and the student's dissertation committee **will form the core of the** Qualifying Exam C**ommittee.** The Research Mentor and the INBS PhD Program Director will coordinate:

- Providing support for developing the written dissertation research proposal,
- Grading of the written section among committee members and
- The oral section of the Qualifying Examination with the student and the committee

Conducting a Qualifying Examination

The comprehensive exam will be scheduled as specified above. Two weeks prior to the exams, the signed Intent to Take Qualifying Examination form (Appendix) must be submitted to the Program Director and then to the School of Graduate Studies.

Written Exam Sections

The written portion of the Qualifying Exam will involve students developing a dissertation research proposal on their dissertation research project. The written research proposal should follow the format for a National Institutes of Health (Ruth L. Kirschstein) National Research Service Award (NRSA) Individual Fellowship. More information on NRSA format can be found here: (http://grants.nih.gov/grants/funding/416/phs416.htm). Students will receive preparation for the written proposal in a number of ways including but not limited to dissertation research proposal writing is incorporated as a topic in the required Graduate Seminar I and periodic speakers and workshops will occur both on and off campus. In addition, INBS 8100 serves as a grant/proposal writing course in the Spring semester of year 2 of the program.

The dissertation research proposal will be of the students' specific research project unless there has been a grant application prior to the submission of the written comprehensive exam. If a grant application has been submitted

on the student's research, the dissertation research proposal submitted for the comprehensive exam will need to have different specific goals. The determination of satisfactory differentiation will be made by the Research Mentor and the Program Director. The dissertation research proposal will be graded by the members of the student's dissertation committee and their Research Mentor. The Research Mentor can help in the early stages with developing the title and specific aims but must allow the student to independently, with minimal help, write a dissertation research proposal. The rubric for the written portion of the comprehensive exam is located in the appendix. To pass the written exam an average minimum score of 80% on the grading rubric from all committee members is required before proceeding to the oral exam. The first submission of the written proposal will be due the first Friday in August following completion of required courses. Late submissions of the proposal can lead to a failed 1st attempt of the examination. The proposal is emailed to the Program Director with the research mentor in copy to distribute to the committee members. The committee will have the written submission graded by the third Friday of August and the student will be notified of the final grade by the fourth Friday of August.

If the student does not achieve the minimum required score of 80%, the student is advised on areas of concern and allowed to revise the proposal and resubmit to the committee by the first week of October and will be notified of the final grade by the fourth week of October. If the student is still unable to achieved the minimum passing score after the second attempt, the student will be dismissed from the Ph.D. program and offered the opportunity to complete a terminal master's degree.

Oral Exam Section

The purpose of the oral section is to evaluate the student's preparedness to develop and conduct a dissertation project. During the oral section of the exam, students will demonstrate their knowledge of background information and methods relevant to the research area. After successful completion and passing of the Written Examination, students will use their written dissertation research proposal and present an overview of the proposal and answer questions from committee members for the Oral Examination. If the first written submission received a "Pass" grade, the oral exam will take place on or before the last Friday in October. If there has to be a resubmission of the written proposal, the oral exam will take place by the first week of December.

After successful completion of both the written and oral sections of the qualifying exam, the research advisor/committee chair will present the relevant forms to the Program Associate with required signatures and forward to the Dean of the School of Graduate Studies for the student's **advancement to candidacy**.

Scheduling the Oral Examination

The student is advised to confer with the Research Mentor (chair of his/her Qualifying Exam Committee) and INBS Program Director when he or she is prepared to set the date of the examination so that necessary arrangements can be made. At the discretion of the Program Director, he/she will attend all Oral Exams to ensure uniformity in the evaluation of the student's performance, but will field no questions. The student should begin this consultation well in advance of the planned exam date to ensure the availability of the examination committee and approval of the examination application by the School of Graduate Studies. The Research mentor is responsible for chairing the committee meeting and reserving the exam room.

Absence of Committee members

A minimum of three committee members is required in order to hold the Oral Exam. It is important to confirm the availability of faculty members prior to the exam date.

Distant Committee members

It is the responsibility of the committee chair to ensure that all technology required for the virtual committee member is available.

Student Illness

If the student's health or a personal situation impedes the student's ability to take the examination as scheduled, the student is required to make this known before the exam so the chair can arrange for a postponement.

Special Accommodations for Students (ADA)

Students needing special accommodations for the examinations must provide a waiver from the Office of Student Disability Services stating the conditions needed for the exam with proof that the student has registered a disability with that office. The notice of accommodation must be submitted one month prior to the written exams. Special considerations cannot be taken into account after the exam. Registering for ADA Accommodations or Services is the responsibility of the student.

Qualifying Exam Scoring and Voting

All members of the Qualifying Examination committee must be present to vote on the exam, and each member is expected to vote either "pass" or "fail" on the student's performance during the entire examination. Committees should make every attempt to reach a unanimous decision.

Each committee member's final decision and subsequent comments should reflect the views of the student's performance on the exam. The final committee summary should be approved by each member of the committee. A vote to pass the student is based only on his or her satisfactory academic performance. It is not appropriate to create conditions related to the dissertation topic – such as who should be the dissertation chair or how the student will be supported during the research phase. In addition, no conditions on subsequent service in a particular course or presentation of a paper at a seminar, will be used to substitute for a student's failure of any part of the examination and will not be accepted by the School of Graduate Studies. Failure of the oral exam occurs when the majority of the exam committee does not submit a score of "pass". The oral exam must be retaken and passed prior to the end of the Fall semester following the submission of written exam. The committee members who administered the first oral exam will also administer the retest.

Denial of Candidacy

Failure of the Qualifying Exam is defined by failure of either the written or the oral sections of the exam. Written exam retakes must be passed prior to end of August following the initial written exam. **If the student fails to pass the second examination (for either written or oral exams), he or she will be considered ineligible to continue and will be dismissed from the doctoral program.**

The Qualifying Exam is rigorously planned, discussed and graded. The INBS Committee wants each student admitted to PhD Program to have the opportunity to succeed in the program. **The process is designed to propel those students forward who have strong foundational skills.**

In this regard, there is NO APPEALS PROCESS for the written nor oral exam. There are no forms for APPEAL that apply for this exam. Please do NOT use other graduate program appeals forms for the PhD Qualifying Exam.

Student Reporting and Presentations

Progress Reports

Students will prepare an Annual Progress Report and present to their advisory committee at the yearly meeting and receive feedback. The student should receive a written assessment from the research mentor summarizing the conclusions of the meeting and future directions of the project. The research mentor will submit an annual progress report on the doctoral student to the INBS Program Director for review by INBS PhD Graduate Committee and the Dean of Graduate Studies.

Students will also be evaluated on an annual basis by the Program Director and INBS Committee (with the student member of the INBS Committee not present). The Annual Progress Form will serve as the basis for this annual evaluation. The intent of this evaluation is to ensure that students are holding annual dissertation committee meetings, are making progress in their dissertation research, and to identify any potential concerns in order to address said concerns.

Public Presentations

Students are required to make poster and/or oral presentations of their research accomplishments at local, regional and national scientific meetings as well as at the NCCU 3MT Competition sponsored by the School of Graduate Studies. Students will present a summary of their work to faculty and peers on an annual basis, in particular in years 3 and 4 of the program of study. Student presentations should be of a professional quality and assistance can be sought from the Director of INBS Program, Research Mentor and other students. **(See Dissertation Presentation)**

Publishable Manuscript

In order to graduate, it is **required** that students have at least submitted or preferably one accepted first-authored manuscript for which they have been the major contributor (see Responsible Authorship section).

Annual Committee Meetings

Students must meet with their dissertation committee a minimum of once per year. Students are required to present a PowerPoint presentation to their committee at each meeting. It should contain an overview of the information to be presented/discussed at the meeting as well as goals for the next meeting. The written progress report and signed Committee Meeting form must be submitted to the Director of the INBS Program following the committee meeting and no later than Nov 15th of each year.

- **4th Year Committee Meeting**: due by Nov 15th
  The 4th year committee meeting written progress report should describe the following:
  i. progress towards goals
  ii. a timeline to graduate within 5 years
  iii. a timeline towards publications(s)
  iv. If applicable, a written petition for extending the time to graduate beyond 5.5 years with an explicit anticipated date for graduation
- **5th year Committee Meeting**: due Feb 15. The student will send each committee member an updated progress report of work done and the timeline of experiments to graduation no later than November 15. A copy of the report, signed by the committee, should be submitted to the Director of the INBS PhD Program no later than Dec 1st.
- **5th year students** no later than 3 months prior to defense, a formal committee meeting including slide presentation to finalize degree completion which must occur by the end of the 5th year.

Students will prepare an annual progress report and present to their Dissertation Committee at an annual meeting with the committee and receive feedback. The student should provide a written assessment to the Research Mentor summarizing the conclusions of the meeting and future directions of the project for approval prior to submission of the report to the Program Director.

Doctoral Dissertation

Dissertation Committee

The research mentor will serve as the chair of this committee. The research mentor guides the PhD student in Doctoral Supervised Research and the research mentor must convene a meeting of the doctoral student and the Dissertation Committee annually to review the student's progress. The Dissertation Committee will also convene

to examine and approve the Dissertation Proposal that is completed at the end of year three. External committee members may be added to provide additional expertise for students in the research areas.

Written Dissertation

After completion of the dissertation research, the student prepares a written dissertation. Completing the doctoral dissertation is one of the final steps leading to the doctoral degree. The manuscript is a scholarly presentation of the results of the research conducted. As a researcher, one has an obligation to make research available to other scholars. The candidates' Dissertation Committee supervises the intellectual content of the manuscript and the Research Mentor (committee chair) will guide students on the arrangement within the text and reference sections of your manuscript.

Oral Defense of Dissertation

The oral defense of the dissertation is, in essence, your first formal appearance as an expert on your subject. In the defense you'll be expected to cogently and clearly explain your work and how it fits with other research and scholarship in your field. The exact nature of the oral defense varies, so it's vital that you talk to your committee about what to expect and how to prepare.

The student <u>must</u> submit the final draft of their dissertation to the dissertation committee, and receive approval from the dissertation committee, before scheduling the oral dissertation defense. A minimum of two weeks must occur between submission and approval of the dissertation by the dissertation committee, and the date of the oral dissertation defense.

Be sure to bring a copy of the full dissertation with you for reference. Your committee members may have questions about your methodology; the validity, credibility, or relevance of your sources; how you interpret your results; or how your research relates to other work being done in your discipline, among other possibilities. The defense is usually scheduled for two hours and the seminar portion of the defense is open to the public. The seminar at the beginning of the defense is expected to be a presentation of professional quality and should be 45-50 minutes duration.

Presentation Tips

- Prepare for technical difficulties. If you're using presentation slides, make a hard copy.
- Consider handouts for any data that should be presented graphically.
- Begin by explaining the problem or questions that led to your research.
- Explain your methods for answering the question or solving the problem.
- Present your major findings, the ones most relevant to your problem or questions.
- Discuss the implications, significance, or applications of your findings.
- Discuss where your research leads you as you begin your scholarly career—what further research does it suggest? What kind of publication opportunities do you see coming from it?

Considerations for the Defense

The closed portion of the defense is a conversation between you and your dissertation committee. You will be asked questions, but you can also ask some, and you should not be surprised if committee members talk to each other, disagree with you or each other, or even challenge your ideas. The final approved dissertation will be bound according to the guidelines set forth by the School of Graduate Studies and will be submitted by the student for publication.

Public Dissertation Presentation

The scientific community produces information that is important to advancing society, keeping citizens healthy, informing the country's leaders and producing materials to educate the next generation of citizens and leaders. Providing an opportunity to educate the public on how and why you have contributed to the public good is an important skill.

Filing the Dissertation

Filing your doctoral dissertation through the School of Graduate Studies begins your final steps leading to the award of your graduate degree. Traditionally, bound copies of dissertations have been archived in the University Library. NCCU has partnered with **ProQuest Dissertation Publishing** to increase access to students' scholarly works.

During the final dissertation submission process, the research doctoral candidate (author) will complete and sign a Doctoral Dissertation Agreement. The Agreement grants ProQuest a non-exclusive license to duplicate and distribute the dissertation and publish the abstract. The author retains the copyright in the dissertation, and keeps the right to publish the dissertation elsewhere, in book form or as separate articles. ProQuest takes care of the arrangements for (a) publishing the abstract in Dissertation Abstracts International; (b) preparing a microfilm copy of the dissertation; and (c) depositing microfilm copies in the University Library.
ProQuest offers a service to the author in which they will register the copyright, and deposit the required copies with the Copyright Office. The fee for this service is $65, which includes the $45 copyright office fee. Although registration is not required to preserve the author's copyright, most copyright specialists feel that it is advisable. Please note the author who decides not to register the copyright through ProQuest, can register the copyright on their own at some later date. **Please keep in mind that your dissertation advisor may not want the dissertation copyrighted until all publishable data has been published.** Copyright before journal publication will preclude the ability to publish your dissertation research in journals.

ProQuest Submission Requirements

- One copy of dissertation on bright white 24lb paper.
- ProQuest abstract (350-word maximum). ProQuest abstract must match abstract in dissertation.
- Two title pages with no signatures: one for dissertation copy and one to be attached to ProQuest Agreement form with abstract.
- Completed and signed ProQuest Doctoral Dissertation Agreement form. ProQuest requires the agreement form (pages 3 and 4) to be filled out in its entirety. Pages 5 and 6 are to be completed only if the student requests copyright registration or ProQuest bound copies/microfiche.
- If material copyrighted by others is included in the dissertation, attach two copies of the copyright permission letter(s) from the copyright owner(s). Such letter(s) should state that ProQuest may supply copies on demand.
- If dissertation contains executable software owned by another party, attach two copies of a letter from the owner of the software license granting permission to use it. Such letter(s) should state that ProQuest may supply copies on demand.
- ProQuest Service fee (required for all students) = $65Optional ProQuest Publishing Services
- Open Access Publishing fee (optional for student) = consult Thesis/Dissertation Coordinator
  For an additional fee, ProQuest offers an Open Access Option, in which ProQuest makes digital copies of your dissertation available as a free download
- ProQuest Copyright Registration fee (optional for students) = $45
  The student must sign "YES" on the Copyright Registration Form (page 5 of Agreement)
- Bound Copies or Microfiche fee (optional for students) = consult Thesis/Dissertation Coordinator
  The student must complete the order form (page 6 of Agreement).

Responsible Authorship*

Publications are the currency of the academic community; as such, attributing the correct authorship plays a direct role in maintaining the value of the currency. Individual journals and professional communities have their own specifications for determining authorship, the following quote from the American Psychological Association provides the core understanding of authorship. "Authorship credit should reflect the individual's contribution to the study. An author is considered anyone involved with initial research design, data collection and analysis, manuscript drafting, and final approval. However, the following do not necessarily qualify for authorship: providing funding or resources, mentorship, or contributing research but not helping with the publication itself. The primary author assumes responsibility for the publication, making sure that the data are accurate, that all deserving authors have been credited, that all authors have given their approval to the final draft, and handles responses to inquiries after the manuscript is published.
(from Publication Practices and Responsible Authorship. American Psychological Association as seen 07/26/2016 on http://www.apa.org/research/responsible/publication/)

1. Everyone who is listed as an author should have made a substantial, direct, intellectual contribution to the work. For example, (in the case of a research report) they should have contributed to the conception, design, analysis and/or interpretation of data. Honorary or guest authorship is not acceptable and is considered unethical. Acquisition of funding and provision of technical services, patients, or materials, while they may be essential to the work, are not in themselves sufficient contributions to justify authorship.

2. Everyone who has made substantial intellectual contributions to the work should be an author. Everyone who has made other substantial contributions should be acknowledged.

3. Individual responsibility may be limited to specific aspects of the work, when research team members are highly specialized.

4. All authors should participate in writing the manuscript by reviewing drafts and approving the final version.

5. One author should take primary responsibility for the work as a whole even if he or she does not have an in-depth understanding of every part of the work.

6. This primary author should assure that all authors meet basic standards for authorship and should prepare a concise, written description of their contributions to the work, which has been approved by all authors. This record should remain with the sponsoring department.
   * Source of responsible authorship: Harvard Medical School Authorship Guidelines. As seen 7/26/2016: http://hms.harvard.edu/about-hms/integrity-academic-medicine/hms-policy/faculty-policies-integrity-science/authorship-guidelines

Resources on Responsible Authorship

- Publication ethics: rights and wrongs- (Ritter, S. K., 2001)
- On Being a Scientist: Publication and Openness- NAS
- On Being a Scientist: Authorship and the Allocation of Credit – NAS
- Reflections on Determining Authorship Credit and Authorship Order on Faculty-Student Collaborations - (Fine & Kurdek, 1993)
- Authorship and Publication -ORI

Research Resources and Protocols

The Dissertation phase of your work will be shaped by the availability of resources, subjects, and the rules governing the conduct of research. An overview of some of the resources and regulations follows. This is not by any means an exhaustive list, but will start you on the pathway of discovery.

Library Facilities

Library resources at North Carolina Central University are located in the James E. Shepard Memorial Library, the Music Library, the School of Library and Information Sciences Library, the School of Law Library, and the Curriculum Materials Center Library located in the Michaux School of Education. These libraries contain over 850,000 volumes. They subscribe to a total of 6,165 periodicals.

NCCU is a member of the Triangle Research Libraries Network (TRLN). TRLN is a cooperative comprised of libraries at Duke University, NCCU, UNC at Chapel Hill, and NC State University, with combined collections of over 10 million volumes. NCCU students can borrow directly from any of the TRLN institutions by presenting a valid NCCU student ID card. Borrowing privileges at TRLN libraries are extended to faculty, staff, and administrators who present a current University ID card. Additional library resources are available at the remaining thirteen institutions in the UNC System, which graduate students and faculty have direct borrowing privileges. Electronic access to these collections is provided via Search TRLN and UNC Express, which are integrated online catalogs.

Research Ethics

Human Subjects

Research involving human subjects require federal regulation [45 CFR 46.102] compliance and must be reviewed and approved or declared exempt by an Institutional Review Board for the Protection of Human Research Subjects. The NCCU Institutional Review Board (IRB) for the Protection of Human Subjects in Research reviews and approves all requests to use humans as subjects in research. This includes educational tests, survey procedures, interview procedures or observations of public behavior, as defined by the Department of Health and Human Services (DHHS) regulations. The NCCU Institutional Review Board (IRB) for the Protection of Human Subjects in Research has the authority to review, approve, or disapprove all research endeavors initiated, promoted, and supported by the university. All proposed research involving human subjects and conducted under the auspices of a department, school, or research unit within the university requires completion of the Request for Review of Research Involving Human Subjects and the Research Protocol forms. The forms should be submitted to the Office of Sponsored Research and Programs (OSRP) prior to submitting a proposal for extramural funding to support such research.

Animal Subjects

NCCU endorses the Principles for the Care and Use of Laboratory Animals of the National Institutes of Health; has implemented the recommendations of The Guide for the Care and Use of Laboratory Animals (1996); and is complying, and will continue to comply, with the Animal Welfare Act and other applicable statues and regulations concerning the care and use of laboratory animals. NCCU recognizes that laboratory animals are sentient creatures. Their use is a privilege accompanied by an ethical and legal obligation for their humane care and handling. Individuals whose work requires them to use animals in research or instruction must understand and be committed to fulfilling the legal and moral responsibilities of such use. The NCCU Institutional Animal Care and Use Committee (IACUC) reviews and approves all requests to utilize vertebrate animals in research or education, evaluates research protocols and inspects animal laboratory housing facilities.

Academic Integrity Policy

As a center of learning, teaching, and research, North Carolina Central University charges its members to maintain patterns of academic behavior, which enable these essential functions. *As members of the PhD program and research community the expectations are that you will hold to the highest standards of ethics. You are here to do original research and publish original work.*

Academic Dishonesty Defined

Academic dishonesty is defined as any conduct, which is intended by the student to obtain for him/her or for others an unfair or false evaluation in connection with any examination or other work for academic credit. Cheating, fabrication, plagiarism and complicity are examples of conduct, which is academically dishonest.

Cheating is the unauthorized use of materials in connection with an examination or other work for academic credit, including, but not limited to:

1. The use of books, notes, outlines, etc. during an examination where the instructor has not authorized use of such materials or information;
2. Seeking unauthorized materials or information from others in connection with an examination;
3. Giving or attempting to give unauthorized assistance to another person in connection with an examination;
4. Obtaining or attempting to obtain unauthorized copies of examinations;
5. Bringing to an examination, or attempting to use during an examination, unauthorized answers which have been prepared before the examination period;
6. Copying or attempting to copy from the work of another student during an examination; and,
7. Submitting for evaluation in a course, part or the whole of a work for which credit has been given previously.

Fabrication is the invention, counterfeiting and/or alteration of quoted passages, data, procedures, experiments, sources or other information in connection with any academic exercise.

Plagiarism is the use of the ideas, words, or works of another without attribution when the information provided is not common knowledge either in content or form and includes, but is not limited to:

1. Quoting from the published or unpublished work of another without appropriate attribution;
2. Paraphrasing or summarizing in one's own work any portion of the published or unpublished materials of another without attribution; and,
3. Borrowing from another's work, data, and facts, which are not in the domain of common knowledge.

Complicity is the giving of assistance or the attempt to give assistance to another for the purpose of perpetrating academic dishonesty.

Sanctions for Academic Dishonesty

Any accusations of academic or research dishonesty will result in a review by the PhD Ethics Review Committee. This committee will be compiled of the INBS PhD program director, the chair persons from the three departments included in the program (Chemistry & Biochemistry, Biological & Biomedical Sciences and Pharmaceutical Science) as well as three student members that will be selected at random by the chair persons. The Ethics Review Committee will review all documentation and interview both the faculty member and the accused student prior to making a vote on the offense. The vote must hold a majority to be upheld. The decision of the committee is then presented to the Dean of Graduate Studies and the Dean of the College of Arts and Science to be upheld. The penalties for conviction of academic dishonesty may include the following and the penalties will be determined by the severity of the offense:

1. Grade of "F" for the course (F in a course results in academic dismissal)
2. Permanent dismissal from the INBS Ph.D. program.

Complete rules governing the Academic Integrity Policy and procedures for appealing any part of the policy may be obtained from the Office of the Dean of Graduate Studies, NCCU, Durham, NC 27707. Note that all procedures do not apply to all programs. Program specific policies and procedures override more general NCCU procedures.

General Guidelines

Vacation Policy

On average, students may take up to two (2) – three (3) weeks of vacation per year upon prior approval from their dissertation advisor. First year students must check with the program director prior to making travel arrangements as taking vacation for more than two weeks will impact your degree progress. Second year and above students must have permission of their Research Mentor/PI to take vacation. Students should plan personal vacation carefully. It is not advised to travel during the semester while you are enrolled in classes. It is the student's responsibility to check the scheduled offerings of Research Ethics, Lab Safety courses, and summer seminars to make sure no required sessions are missed.

Course Exemptions

Students should apply for credit reduction considerations using the Transfer Credit Request form available from the Office of the Registrar. As part of the petition; the completed form, the syllabus and textbook information used in completing the course should be included as supporting documentation and submitted to the Doctoral Curriculum Committee for review. In consultation with the faculty advisor, students should determine which courses from their master's degree program may be eligible for exemption or substitution. This form should be submitted prior to candidacy consideration.

It is strongly recommended that students request all exemptions upon enrollment into the program and no later than completion of their first semester.

Dismissal from the Program

Students not making satisfactory degree progress are subject to academic review by the INBS Graduate Committee and/or dismissal. See specific conditions under the following sections: Academic Standing, Satisfactory Degree Progress, Qualifying Exams, External Employment. Students are not guaranteed placement in a research lab. Successful research progress is dependent upon strong advisor-advisee relationships. Student failing to secure a research lab, will not continue in the program. In cases where a student is subject to dismissal, the School of Graduate Studies will be notified and the Graduate Handbook followed.

Scholarships, Graduate Assistantships, Tuition, Fees

Students in the program may receive support funds from a variety of sources. Students in the PhD program receive a scholarship, tuition, and health insurance for two years (if students remain in good academic standing). Financing, through graduate assistantships, teaching assistantships, and fellowships are expected to fund students through years three through five. There is <u>no</u> <u>guarantee</u> of funding past year two of the program. Students should plan a program of a maximum of five years, although some students may take either less or greater than five years to complete the program of study. All funding is contingent upon satisfactory progress toward degree completion (see sections on Academic Standing, Satisfactory Degree Progress, Dismissal from the Program). Students must have a designated research lab after year one to receive funding.

Graduate Assistantships and Fellowships

Full-time graduate students pursuing dissertation research may be supported with graduate fellowships, assistantships, either as teaching (TA) or research assistant (RA) generally for a period of no more than three years. Full-time teaching assistants are expected to work 20 hours per week and must enroll as full-time students (currently 9 hours per semester, including research. Summer enrollment is required only if receiving summer pay as a TA or an RA. A student must be in good standing (GPA > 3.0) and making adequate progress on degree requirements for a contract to be renewed as either a TA or RA. A student on probation from the Graduate School is not eligible for either a TA or RA.

While the University policy of 20 hours/work per week is stated in the stipend funding contract, students should recognize that following completion of their coursework that the standard practice in a PhD program is that

students are full-time in the laboratory, including weekends. As NCCU students your research projects will be competing with labs at Research 1 universities, where the lab members are working "night and day", including weekends.

External Employment

Students are expected to devote their full attention to their graduate study. Students are supported on fellowships, TAs or RAs or combinations thereof**. At no time is a student allowed to pursue additional employment while on fellowship, TA, or RA.** If the need arises to consider additional employment, the student must seek and be granted permission from the research mentor, INBS PhD Program Director, and INBS Ph.D. Committee before pursuing such external employment. Failure to gain approval prior to accepting additional employment may result in loss of funding and/or termination from the program.

Purchase of textbooks

Study books at this level are important references during classes and throughout their study. Study support in the form of tuition, fees and fellowships are awarded in order to allow students to purchase course books. Students are expected to purchase the required texts for their classes.

Pre-Doctoral Fellowship Applications

All students are encouraged to apply for any/all fellowships for which they are eligible. Students are encouraged to consult their faculty advisors when preparing fellowship applications and before submission of such applications. All eligible first and second year PhD students are encouraged to apply for pre-doctoral fellowships. Students admitted to candidacy are required to apply for a pre-doctoral fellowship in their fields of research using their approved oral examination.

Other Campus Programs, Services, Activities, and Resources

Other campus resources to support NCCU students include:

- *Student Advocacy Coordinator (formerly Student Ombudsperson)*. The Student Advocacy Coordinator is available to assist students in navigating unexpected life events (e.g. short-term illness/injury, loss of a loved one, personal crises) and guide them to the appropriate University or community resources. Students may also receive assistance with resolving some emergency financial concerns; understanding NCCU policies, rules and regulations; or general problem-solving strategies. Contact Information: Student Services Building, G-06, (919) 530-7492, studentadvocacy@nccu.edu.
- *Counseling Center.* The NCCU Counseling Center is staffed by licensed psychologists and mental health professionals who provide individual and group counseling, crisis intervention, substance abuse prevention and intervention, anger management, and other services. Contact Information: Student Health Building, 2nd Floor, (919) 530-7646, counseling@nccu.edu.
- *University Police Department*. The University Police Department ensures that students, faculty and staff have a safe and secure environment in which they can live, learn, and work. The Department provides a full range of police services, including investigating all crimes committed in and around its jurisdiction, making arrests, providing crime prevention/community programs, enforcing parking regulations and traffic laws, and maintaining crowd control for campus special events. Contact Information: 2010 Fayetteville Street, (919) 530-6106, nccupdinfo@nccu.edu.
- **Confidentiality and Mandatory Reporting**
- All forms of discrimination based on sex, including sexual misconduct, sexual assault, dating violence, domestic violence, and stalking offenses, are prohibited under NCCU's Sexual Misconduct Policy (POL 80.07.1). NCCU faculty and instructors are considered to be **responsible employees** and are required to report information regarding sexual misconduct to the University's Title IX Coordinator. The Sexual Misconduct Policy can be accessed through NCCU's Policies, Rules and Regulations website at www.nccu.edu/policies/retrieve.cfm?id=450. Any individual may report a violation of the Sexual Misconduct Policy (including a third-party or anonymous report) by contacting the Title IX Coordinator at

(919) 530-6334 or TitleIX@nccu.edu, or submitting the online form through http://www.nccu.edu/administration/dhr/titleix/index.cfm. For more information and resources, click on NCCU Title IX Policy Statement and Sexual Misconduct Policy .

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