



UNIVERSIDAD CENTRAL DEL CARIBE

# Graduate Program in Biomedical Sciences

## Catalog 2020-2021



**TABLE OF CONTENT**

AFFIRMATIVE ACTION Statement .....1

RIGHTS AND RESPONSIBILITIES OF GRADUATE STUDENTS .....1

MISSION AND GOAL OF THE UNIVERSIDAD CENTRAL DEL CARIBE .....2

GRADUATE PROGRAM IN BIOMEDICAL SCIENCES MISSION.....2

GENERAL INFORMATION .....2

GOVERNANCE AND ADMINISTRATION.....3

    GPBS Administration .....3

RESEARCH FACILITIES.....3

    Animal Resources Center (ARC) .....3

    Behavioral Testing Facility (BTF) .....4

    Biomedical Proteomic Facility (BPF).....4

    Common Instrumentation and Technical Support Unit .....4

    Data Management and Statistical Research Support Unit (DMSRSU).....4

    HIV and Substance of Abuse Laboratory.....4

    Optical Imaging Facility .....4

    Transmission Electron Microscopy Laboratory .....4

    Research Support Offices.....5

        Office of the Associate Dean for Research and Graduate Studies (OADRGS) .....5

        Research Development and Sponsored Programs.....5

        Graduate Student Association.....5

PROGRAM ADMINISTRATIVE PROCEDURES.....6

    Deanship for Admissions and Student Affairs.....6

ADMISSION TO THE PROGRAM.....6

    General Requirements .....6

    Application Process.....6

    Acceptance .....7

STUDENT CATEGORIES .....7

    Auditing Students.....7

    Special Students .....7

    Non-degree Students.....7

        Admission Requirements for non-degree students .....7

        Tuition and Fees for non-degree students.....7

        Financial Aid for non-degree students.....7

        Grade and Transcript Information for non-degree students .....7

        Non-degree registration.....8

Transient Students .....	8
Admission Requirements for Transient Students .....	8
TECHNICAL STANDARDS .....	8
Observation.....	8
Intellectual/Conceptual Abilities .....	9
Motor Skills.....	9
Communication .....	9
Behavioral and Social Attributes .....	9
STUDENT SERVICES.....	10
Counseling Program .....	10
Student Tutoring Program.....	10
Relaxation Facilities .....	10
Student ID Cards.....	10
FINANCIAL AID .....	10
Emergency Loans .....	10
Federal Family Education (FFELP).....	10
Financial Support from the Graduate Program in Biomedical Sciences .....	11
Graduate Fellowships.....	11
Tuition and Fee Waiver .....	11
Eligibility.....	12
Selection Process.....	12
Appointment and Notification.....	13
Minimum Course Load .....	13
Loss of Eligibility .....	13
Termination of Appointments.....	13
Appeals.....	14
Administrative Procedures.....	14
Exceptions .....	14
REGISTRAR'S OFFICE .....	15
Registration .....	15
Diplomas .....	15
Change in Address.....	15
TUITION AND FEES .....	16
Tuition .....	16
Other fees .....	16
Fees for other services.....	16

Reimbursement of Tuition fees .....	17
GRADING POLICY .....	17
Academic Honors .....	17
Formal Grade Appeal Procedure .....	18
STUDENT STATUS IN THE PROGRAM .....	19
WITHDRAWAL PROCEDURES .....	19
READMISSIONS .....	20
TRANSFERS .....	20
Transfer Students .....	20
Transfer between Programs .....	21
LEAVES OF ABSENCE .....	22
Personal Leave of Absence .....	22
Medical Leave of Absence .....	23
Family Leave of Absence .....	23
STUDY PROGRAMS IN THE BIOMEDICAL SCIENCES .....	24
GRADUATE STUDENT COMPETENCIES .....	25
GRADUATION REQUIREMENTS .....	32
Ph.D. Degree .....	32
MS/MA Degree .....	32
Graduation Requirements Check List .....	33
Time Limitations .....	34
Ph.D. Degree .....	34
MS/MA Degree .....	34
Extension Request Procedure .....	34
PROGRAM ACADEMIC REQUIREMENTS .....	35
Academic Program Advice .....	35
Language Requirements .....	35
Graduation .....	35
Maintenance of Active Status .....	35
Programs of Study .....	35
Residency .....	35
Research Mentor .....	36
MA Mentor .....	36
Bibliographical Reports .....	36
Seminars .....	36
Dissertation / Thesis Committee .....	36

Dissertation / Thesis.....	37
Dissertation / Thesis Defense .....	37
Specific Requirements for the Ph.D. Degree .....	38
Candidacy Examination.....	38
Requirements for the Masters Degree .....	38
Comprehensive Examinations.....	38
Specific Requirements for the Master of Science (MS) Degree with Departmental Specialization ..	39
Course Requirements.....	39
Research Proposal.....	39
Specific Requirements for the Master of Arts (MA) Degree with Departmental Specialization.....	39
Course Requirements.....	39
Specific Requirements for the Master of Arts (MA) Degree in the Biomedical Sciences .....	39
Course Requirements.....	39
Course Load.....	40
PhD Degree.....	40
MS/MA Degree .....	40
Enrollment.....	40
Full-time Research Enrollment.....	41
Class Attendance .....	41
Coursework at other institutions.....	41
Use of online courses offered by other institutions .....	41
Ownership of Unpublished Research Data .....	42
Recognition for Outstanding Research .....	42
<b>COMPACT BETWEEN BIOMEDICAL GRADUATE STUDENTS AND THEIR RESEARCH ADVISORS</b> <b>(Based on AAMC Group on Graduate Research, Education and Training (GREAT)).....</b>	<b>43</b>
Pre-doctoral training.....	43
Core Tenets of Pre-Doctoral Training .....	43
Institutional Commitment.....	43
Program Commitment .....	43
Quality Mentoring .....	43
Provide Skills Sets and Counseling that Support a Broad Range of Career Choices .....	44
Commitments of Graduate Students.....	44
Commitments of Research Advisors.....	45
<b>TERMINATION OF THE STUDENT-MENTOR RELATIONSHIP.....</b>	<b>47</b>
Student Voluntarily Resignation from a Laboratory.....	47
Dismissal of a Student by his/her mentor.....	47

EXAM QUESTIONS .....	47
GRIEVANCES .....	47
DEFINITIONS .....	48
Course Credits .....	48
Semester .....	48
Academic Year .....	48
GRADUATE PROGRAM IN BIOMEDICAL SCIENCES FORMS .....	49
BIBLIOGRAPHIC REPORT FORMATTING .....	50
Font/Spacing/Formatting .....	50
Numbering Pages .....	50
Margins .....	50
References .....	50
DISSERTATION / THESIS FORMATTING .....	51
Final Copies .....	51
Information on Dissertation / Thesis .....	51
Abstract .....	51
Style and Content .....	51
Manuscript Formatting .....	51
Title Page .....	52
Advisory Committee Approval Page .....	52
Copyright page .....	52
Chapter Titles .....	52
Abstract .....	52
Physical Requirements .....	52
Formatting .....	52
Font .....	52
Spacing .....	52
Abbreviations .....	52
Numbering Pages .....	53
Margins .....	53
Footnotes and Endnotes .....	53
Figures .....	53
References .....	53
Author's Published Manuscripts .....	53
Sequestration .....	54
Thesis title page example .....	55

Dissertation title page example .....56  
Advisory Committee page example .....57

## CORRESPONDENCE

For information on the Graduate Program in Biomedical Sciences (GPBS), please contact:

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www.uccaribe.edu/biomed/

NOTE: The information in this manual is subject to change without notice. The Universidad Central del Caribe reserves the right to make changes as deemed necessary in calendars, fees, policies, academic requirements, regulations, programs, and other subjects, after its publication date.

Changes to the GPBS Manual to address Institutional policies and regulations not previously addressed, apply to all students irrespective of the year of admission.

### **AFFIRMATIVE ACTION Statement**

Universidad Central del Caribe (UCC) recognizes the right of all persons to work and to advance on the basis of their merit, qualifications, ability and potential, and is therefore committed to taking any and all steps necessary to identify and alter policies, practices, or other institutional barriers which cause or perpetuate inequality or discrimination. It is the policy of this University to recruit, employ, and promote staff and to admit and serve students without regard to race, religion, color, sex, sexual orientation, gender identity, age, marital status, political ideas, social condition, physical or mental impairment, genetic information, veterans, victim or perceived as victim of domestic abuse or national or social origin.

### **RIGHTS AND RESPONSIBILITIES OF GRADUATE STUDENTS**

Students have the responsibility to familiarize themselves with the policies and procedures of the University, the Graduate Program in Biomedical Sciences (GPBS), and their department or program. Students are primarily responsible for knowing the degree requirements and following the policies that govern their academic program. If students have concerns or doubts about individual policies and procedures, they may contact their advisor, their department GPBS coordinator or chairperson, or the Office of the Associate Dean for Research and Graduate Studies.



### **MISSION AND GOAL OF THE UNIVERSIDAD CENTRAL DEL CARIBE**

To prepare high-quality and committed health professionals to meet the health needs of the community in its biological, physical and social context with a humanistic focus and a high sense of moral obligation. It is characterized by its emphasis on the excellence of its educational programs, research activities and services of health maintenance, prevention and early detection of illness. It is committed to improving the quality of life of the Puerto Rican community through its services, as well as to developing health care professionals.

### **GRADUATE PROGRAM IN BIOMEDICAL SCIENCES MISSION**

The mission of the Graduate Program in Biomedical Sciences is to develop highly trained, independent and ethically oriented scientists, through interdisciplinary research, academic training and community outreach activities, which are capable of expanding the current knowledge in Biomedical Sciences contributing to the diverse scientific workforce for the benefit of humanity. (Revised 2019)

### **GENERAL INFORMATION**

Universidad Central del Caribe (UCC) opened its doors in 1976. UCC was the first private medical school incorporated under the laws of the Commonwealth of Puerto Rico. Currently, UCC is a health-sciences university with programs in Medicine, Medical Images Technology (Bachelors in Medical Imaging, Certificate Program in Diagnostic Medical Sonography, Certificate Program in Mammography)., Substance Abuse Program and a Graduate Program in Biomedical Sciences. The Substance Abuse Program offers a Post-Baccalaureate Certificate in Substance Abuse Counseling and a Master of Health Sciences in Substance Abuse Counseling.

The Graduate Program in Biomedical Sciences (GPBS) is within the School of Medicine and offers a Doctor of Philosophy in Cellular and Molecular Biology, a Doctor of Philosophy in Neuroscience, as well as Masters in Science or in Arts in Anatomy and Cell Biology, Biochemistry, Microbiology and Immunology, Neuroscience, Pharmacology, and Physiology. In 2018, the UCC incorporated a Doctor of Chiropractic degree academic program that combines a solid foundation in basic sciences and clinical skills, together with an in-depth immersion into the evidence-based chiropractic field.

All UCC students are educated in a holistic approach to health care and wellness, The UCC faculty members carry out extensive studies in basic, clinical and behavioral biomedical research and provide specialized health care services to the community. Since 1976, UCC has been committed to providing educational opportunities to students from underrepresented backgrounds (Hispanics, low socioeconomic status, rural areas), as well as providing services to the communities where they live. UCC strives to provide underrepresented students with excellent opportunities for advanced education.

## **GOVERNANCE AND ADMINISTRATION**

The Board of Trustees outlines the general policies and supervises the operations of the university. Prestigious members of our community volunteer their participation in this governing body. The president of the university is appointed by the Board of Trustees and is the Chief Executive Officer of the university. The deans are appointed by the Board of Trustees upon the president's recommendation and are responsible to the president. The board, upon the recommendation of the president, approves appointments of all administrative officials and faculty, after consultation with the deans and faculty.

The Dean for Academic Affairs is the university's Chief Academic Officer. The Dean for Admissions and Student Affairs supervises all student services and the admissions process of all university programs. The Dean of Administration oversees all administrative and support services.

The School of Medicine is divided into basic sciences and clinical departments, and their chairs respond directly to the Dean of Medicine. The Associate Dean for Research and Graduate Studies also responds to the Dean of Medicine.

The Medical Images Technology Program, including the specialties of Diagnostic Sonography and Mammography, has a program director who in turn responds to the Dean for Health Sciences and Technologies.

The Certificate in Substance Abuse Counseling and the Master of Health Sciences in Substance Abuse Counseling programs are supervised by a program director who in turn responds to the Dean for Academic Affairs.

### **GPBS Administration**

Academic administration of the GPBS corresponds to the Associate Dean for Research and Graduate Studies, who works in close contact with a Graduate Program Coordinator and one coordinator from each of the Basic Sciences departments: Anatomy and Cell Biology, Biochemistry, Microbiology and Immunology, Neuroscience, Pharmacology and Physiology.

## **TEACHING FACILITIES**

The Biomedical Sciences Building has lecture rooms, student laboratories and a Learning Resources Center. Students perform laboratory work in Gross Anatomy, Histology and Embryology, Neuroanatomy, Biochemistry, Microbiology, Pharmacology and Physiology.

## **RESEARCH FACILITIES**

UCC has research laboratories and specialized research facilities with the necessary equipment to perform the research according to the interest of the researcher. The average size of the laboratories is 180 square feet. The individual research laboratories are complemented with common instrumentation areas, a cell culture laboratory, a retrovirology laboratory, an electron microscope, and a radioisotope laboratory.

The specialized research facilities are:

### **Animal Resources Center (ARC)**

The Animal Resource Center is staffed with specialized personnel in animal care and handling to support research and education activities. The center houses small and large animals in its 7,700 squares feet facility and provides information concerning purchasing, basic husbandry, quarantine, and veterinary medical care of laboratory animals.

The center also provides technical assistance and advice dealing with animal species used for investigation and supports the research programs by making readily available animals, materials and animal husbandry supplies.

The center is equipped with specialized areas to provide the following services: necropsy, stock and treatment, quarantine, bedding, cage washing and storage. The facilities also include an experimental surgery area with surgical, scrub, sterilizing, and recovery rooms.

### **Behavioral Testing Facility (BTF)**

The Behavioral Testing Facility was created to facilitate the development of neuroscience research at the Universidad Central del Caribe recognizing the importance of behavioral testing. The facility has two major components: A) the equipment infrastructure and B) the technical support division. The facility offers equipment for remote behavior visualization (RBV).

### **Biomedical Proteomic Facility (BPF)**

The mission of the facility is to accelerate discovery by giving UCC investigators access to cutting edge technologies in proteomics and in mass spectrometry. The facility stimulates the use of 2D gels and protein analysis, via the software PD-Quest, by the faculty. The aim is to provide separation and mass spectrometry techniques for the quantitative analysis of the proteome. One major objective is to identify disease and other relevant biological markers.

### **Common Instrumentation and Technical Support Unit**

Is a core area housing major equipment such as ultracentrifuges, freezers, spectrophotometers, gamma counters, etc, as well as the centralized cell culture facility. The unit fosters equipment sharing, centralizes maintenance of equipment and provides repair for the equipment of all the projects.

### **Data Management and Statistical Research Support Unit (DMSRSU)**

The DMSRSU provides study design, data management, quality assurance, and statistical analysis support for UCC researchers. The DMSRSU has a strong infrastructure which includes the following subunits: Data Abstraction and Management; Data Entry; Quality Control; Data Analysis and Consultant; and Administrative and Computer Systems. Each of these subunits consists of experienced professionals readily available to assist researchers and to provide data management and statistical research support to investigators. In addition, the DMSRSU counts on a highly experienced and reliable consulting team.

### **HIV and Substance of Abuse Laboratory**

The laboratory supports research in the areas of HIV/AIDS and substances of abuse. Specialized facilities are made available to researchers for scientific studies in fields of immunology, drugs of abuse, HIV/AIDS, and related infectious diseases. This core laboratory provides researchers with assays for nucleic acids detection, virus genotyping, flow cytometric phenotyping, lymphocyte proliferation, cytotoxic and non-cytotoxic activity, cytokine and chemokine determinations, and drugs of abuse quantification.

### **Optical Imaging Facility**

The facility offers microscope-based systems that allow the assessment of cellular responses, such as calcium signaling with fast temporal resolution. The facility offers: a) confocal imaging services; b) brightfield, darkfield, phase contrast, Nomarski, and epi-fluorescence imaging; c) high spatial and temporal resolution imaging; d) collection of serial sections (deconvolution capabilities); and e) morphometric analysis.

### **Transmission Electron Microscopy Laboratory**

The TEM laboratory provides access to ultrastructural analysis of biological specimens via a Jeol 100 CX transmission electron microscope. The TEM is equipped with AMT 4 MP digital camera to facilitate

image acquisition and 3D reconstruction from serial sections. In addition, to conventional EM procedures of in situ and cell culture specimens the laboratory also offers immunogold labeling and the visualization of fluorescent dyes after photoconversion.

## **Research Support Offices**

### **Office of the Associate Dean for Research and Graduate Studies (OADRGS)**

The main goal of the OADRGS is to actively facilitate and promote research development, interdisciplinary research enterprises and graduate program curriculum development within UCC's academic community. The OADRGS is devoted to establishing and implementing pre-and-post award procedures, assisting researchers in the preparation of proposals and publications, establishing a strong profile for generation of external revenue and research grant management, and fostering research collaborations.

### **Research Development and Sponsored Programs**

OADRGS research development personnel provide technical assistance to faculty in the development and preparation of proposals, contracts, cooperative agreements processing of proposals, and electronic proposal submission (Pre-Award). Additionally, they provide services such as preparation of budget, budget management and progress report submissions (Post-Award). They facilitate the successful competition for external funding, assist in the management of and compliance in sponsored projects. The Office negotiates contracts and grants with a wide variety of sponsors, assists in the management of external funds; manages the Sponsored Programs Information Network (SPIN) and Federal Grants and Contracts Weekly databases for identifying potential grant opportunities and makes available pilot project funding, to obtain preliminary data for grant applications.

### **Graduate Student Association**

The Graduate Student Association (GSA) comprises degree seeking graduate students at the Universidad Central del Caribe. The GSA mission is to enrich the graduate student experience and to represent, support, and promote graduate student interests. The GSA collaborates with programs and services aiding in recruitment and retention of graduate students, represents graduate student interests to the University administration, and builds a sense of community among graduate students.

The President of the Graduate Student Association will represent the association in the Student Council. The directors of the Graduate Student Association (President and Secretary) will be elected during the Student Council election.

## PROGRAM ADMINISTRATIVE PROCEDURES

### Deanship for Admissions and Student Affairs

The Deanship for Admissions and Student Affairs is responsible for the administration and coordination of the admissions process. The Admissions Office assures confidentiality and integrity in the admissions process in adherence with institutional and federal regulations.

### ADMISSION TO THE PROGRAM

Admission to the Graduate Program in Biomedical Sciences (GPBS) is responsibility of the GPBS Admissions Committee, an advisory committee composed of faculty members. In evaluating applicants, the Admissions Committee considers academic qualifications, personal traits and potential for success in the program as evidenced in academic records, the results of the Graduate Record Examination (GRE), personal statement, and letters of recommendation, personal interviews, research and other related experience.

### General Requirements

1. Applicants must have bachelor degree in a college or university accredited by the Council of Higher Education or the corresponding US accrediting agency.
2. The applicant must have a minimum general grade point average of 2.75 or above on a scale where A= 4.0 (includes all courses taken at college/ university level).
3. The applicant must have a minimum science grade point average of 3.00 or above on a scale where A= (includes all courses in Biology, Chemistry, Physics and Mathematics taken at college/university level).
4. Total course work must include the following:
  - 2 courses in Mathematics
  - 2 courses in Chemistry
  - 2 courses in Biology
  - 2 courses in Physics

It is recommended that candidates complete the following coursework at the undergraduate level: calculus I, statistics, general and organic chemistry, general biology, biochemistry, cell biology, molecular biology or genetics, general physics, microbiology, immunology and/or other courses related to the area of specialization.

5. Applicants must demonstrate fluency in speaking, reading and writing in Spanish and English.

### Application Process

1. An Institutional Application for Graduate Program. The application must be submitted no later than **February 1<sup>st</sup>**.
2. An essay indicating your interest in a graduate degree in biomedical sciences.
3. Official transcript from each college/university attended to be sent directly to our Admissions Office.
4. Official scores of the Graduate Record Examination (GRE). These results are valid for five years only prior to application. The web site is [www.ets.org/gre](http://www.ets.org/gre).
5. Three letters of recommendation, including at least two from former professors in the student's area of specialization of the last completed degree.
6. Payment of \$ 50.00 non- refundable processing fee established at our institution. Payments must be in the form of a money order addressed to the Universidad Central del Caribe and sent directly to our Collection Office. No personal check, credit card or ATM are acceptable.
7. A Criminal Background Check (CBC) is required.

8. Interview with the department to which the student is applying or the Graduate Program in Biomedical Sciences Admissions Committee.

\*Students from foreign institutions must send an official translation, validation and/or equivalency to U.S.A. system in order to have their academic documentation considered. We suggest Word Educational Services (WES) as an external agency for this purpose. The web site is [www.wes.org](http://www.wes.org)

### **Acceptance**

1. To guarantee enrollment upon acceptance, the candidate must make a \$100.00 non- refundable deposit.
2. The Technical Standard agreement with the official signature.
3. The student must submit a health certificate and a physical examination by a licensed physician with the laboratory and test required.

## **STUDENT CATEGORIES**

### **Auditing Students**

Those students, who wish to audit some courses, may do so if they have the approval of the Chairperson of the Department offering the course(s) and if they register during the registration period. They must also pay the corresponding fees. Auditing students are authorized to participate in all educational activities of the course; however, they will not take course exams or receive a grade. They can take non-graded quizzes, as an evaluation tool.

### **Special Students**

If a candidate does not meet one of the admission requirements he/she may be admitted to the Program as a “special student” after a careful evaluation and recommendation of the department concerned and/or of the Graduate Program in Biomedical Sciences Admissions Committee. The student must comply with the conditions stipulated for admission to be reclassified as a regular student. The student will have an academic year to complete the minimum admission requirements.

### **Non-degree Students**

A non-degree student is a student who attends classes at UCC, but who has not been admitted into the Graduate Programs in Biomedical Sciences. Anyone may take courses as a non-degree student.

#### **Admission Requirements for non-degree students**

Non-degree enrollment status does not require a formal admission process or formal entrance requirements. Students must complete an Application for Admissions and pay the non-refundable application fee. Enrollment as a non-degree student does not guarantee regular admission to the University. Students wishing to apply for full admission should refer to the Graduate Programs in Biomedical Sciences admissions requirements.

#### **Tuition and Fees for non-degree students**

Non-degree students' enrollment requires tuition and fee assessment at the rate as a regularly enrolled, fully admitted student.

#### **Financial Aid for non-degree students**

Non-degree students are not eligible to receive financial aid.

#### **Grade and Transcript Information for non-degree students**

Non-degree students are given grades, reviewed according to the University standards of good academic progress, and provided with academic records.

### **Non-degree registration**

Non-degree students must complete a Non-Degree Student Registration Form. This must be completed for each semester that you wish to enroll as a non-degree student. The Associate Dean for Research and Graduate Studies must approve the enrollment.

### **Transient Students**

Students who are enrolled in a graduate program at another university and want to take coursework at UCC and transfer it to their home institution are considered transient students by UCC.

### **Admission Requirements for Transient Students**

Transient students enrollment status does not require a formal admission process or formal entrance requirements. Students must complete an Application for Admissions, pay the non-refundable application fee and submit a letter from their home institution stating that they are in good academic standing and that the home institution will accept the UCC coursework. The Associate Dean for Research and Graduate Studies must approve the enrollment.

### **TECHNICAL STANDARDS**

The Universidad Central del Caribe is committed to full compliance with the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990.

Qualified applicants to the GPBS must be able to complete all requirements leading to the degree. Applicants/graduate students are expected to carry out procedures involved in learning the biomedical sciences including the ability to participate fully in activities dealing with curriculum requirements in the classroom and the laboratory.

In addition to proven academic ability and other relevant personal characteristics, UCC expects its students to possess and be able to demonstrate the skills, attributes, and qualities listed below, without undue dependence on technology or intermediaries to a degree that compromises independent judgment. The use of a trained intermediary is not acceptable in many situations in that it implies that a student's judgment must be mediated by someone else's power of selection and observation.

Degrees from the Graduate Program in Biomedical Sciences imply that the recipient has demonstrated knowledge in the field and the ability to independently apply that knowledge to solve a particular problem by forming hypotheses, designing and conducting experiments, interpreting the experimental results, and communicating the results and their interpretation to the scientific community. Thus, students must demonstrate competence in those intellectual and physical tasks that represent the fundamentals of biomedical research and must possess abilities and skills that allow for observation, intellectual and conceptual reasoning, motor coordination, communication and social interactions.

The Graduate Program in Biomedical Sciences has specified the following technical standards that all students must meet to participate in the graduate education program. Technical Standards are non-academic requirements that are essential for meeting the academic requirements of the program.

The following technical standards will be applied to the selection of students and to students enrolled in the Graduate Program in Biomedical Sciences.

### **Observation**

Observation and information acquisition requires functional visual, auditory and somatic sensation and it is enhanced by the functional use of the sense of smell. The applicant/graduate student must be able to acquire knowledge by direct observation of demonstrations, experiments, and experiences within the laboratory and instructional setting. Examples are physiological or pharmacological responses in animals, studies of microbiological cultures and organisms, identification of normal and abnormal cells or tissues through a microscope, and interpretation of results obtained on various instrumentation.

Acquire, assimilate, interpret, integrate, and apply information from direct observation and oral communication, written messages, films, slides, microscope, imaging science, readouts, and other media.

### **Intellectual/Conceptual Abilities**

The applicant/graduate student must be able to measure, calculate, analyze, reason, integrate, synthesize information to solve problems and comprehend three-dimensional and spatial relationships.

### **Motor Skills**

The applicant/graduate student must possess motor skills necessary to perform procedures required for experimentation and participate actively in all aspects of laboratory experimentation. These skills may include, but are not limited to, surgery in animals, handling of animals, transfer of microorganisms to various mediums, preparing chemical and often toxic materials and solutions, preparation of anatomical specimens for microscopic examination, manipulating electronic and other complex equipment. Such actions require coordination of both gross and fine muscular movements, equilibrium and functional use of the senses of touch and vision.

### **Communication**

Required communication skills include verbal communication, reading, writing and the use of electronic communication devices. The applicant/graduate student must be able to communicate in settings where the time span available for communication is limited. The applicant/graduate student must be able to communicate and discuss his or her experimental hypotheses and results to the scientific community, both in scientific journals or directly at scientific meetings, seminars, or in the laboratory to the research team.

### **Behavioral and Social Attributes**

The applicant/graduate student must possess the emotional and mental health required for full utilization of his or her intellectual abilities, the exercise of good judgment, the prompt completion of responsibilities inherent in managing a scientific laboratory, the ability to function under the stress, and the ability to understand and comply with ethical standards for the conduct of research.

The applicant/graduate student must be able to tolerate physically taxing workloads. They must be able to adapt to changing environments, to display flexibility, and must be able to perform problem-solving tasks quickly and efficiently in an environment that may change rapidly, without warning, and/or in unpredictable ways.

The applicant/graduate student must be capable of developing mature, professional and effective relationships with others. Integrity, interpersonal skills, interest and motivation are all personal qualities that are assessed during the admissions and education processes.

UCC is committed to making its programs accessible to qualified individuals with disabilities. Reasonable accommodations may be provided to qualified individuals with disabilities in order to provide equal educational opportunity. In all circumstances, candidates must be able to meet the academic and technical standards requisite for admission and participation in the GPBS.



## **STUDENT SERVICES**

The Deanship of Admissions and Student Affairs is also responsible for student services.

### **Counseling Program**

Counseling services are available through the Dean for Admissions and Student Affairs. The Counseling Program is aimed at assisting students to take maximum advantage of the educational opportunities at the Universidad Central del Caribe, and to contribute to their success in their future professional goals. Students are referred to other specialized counseling and mental health services as needed.

### **Student Tutoring Program**

It is the goal of this program to provide academic tutorial assistance to students confronting academic difficulties. Students with academic difficulties are referred to the Counseling Program for a comprehensive assessment. Contingent to the findings of this assessment, they are referred to the Tutorial Program or to the appropriate counseling service.

### **Relaxation Facilities**

A space for relaxation and for student fraternization is available. A section of the student lounge has been prepared with exercise equipment to serve as a fitness center.

### **Student ID Cards**

An identification card is issued to all registered students, and includes a photograph, name, and student number. The ID is required to gain access to all UCC facilities and entrance to hospitals, community preceptorships, practicums and internships, campus events, checking out books from the library and other official activities. The student ID is also programmed to be use as a key to enter the 24/7 study areas.

## **FINANCIAL AID**

### **Emergency Loans**

This is a UCC fund that was initially created by donations from Merck, Sharp and Dohme, other institutions and private sponsors. It provides up to a maximum of \$500.00 for MD and Graduate Programs or \$250.00 for undergraduate programs per semester to cover unanticipated emergency study expenses.

### **Federal Family Education (FFELP)**

This program is authorized in Part B of Title IV of the Higher Education Act of 1965, as amended in 1998. Under the FFELP program, students and their parents can obtain low-cost education loans to assist in the payment of higher education costs. The loan is guaranteed to protect the lender from loss in the event of the borrower's death, disability, bankruptcy, or default. The US Department of Education reinsures the guarantor.

**Direct Subsidized Loan- Subsidized Loans** are loans for undergraduate students with financial need, as determined by your cost of attendance minus expected family contribution and other financial aid (such as grants or scholarships). Subsidized Loans do not accrue interest while you are in school at least half-time or during deferment periods.

**Direct Unsubsidized Loan-Unsubsidized Loans** are loans for both undergraduate and graduate students that are not based on financial need. Eligibility is determined by your cost of attendance minus other financial aid (such as grants or scholarships). Interest is charged during in-school, deferment, and

grace periods. Unlike a subsidized loan, you are responsible for the interest from the time the unsubsidized loan is disbursed until it's paid in full. You can choose to pay the interest or allow it to accrue (accumulate) and be capitalized (that is, added to the principal amount of your loan).

**Grad Plus Loan Program**-are loans for graduate and professional students who are ineligible for Unsubsidized Loans or need to supplement their Unsubsidized awards. The borrower is responsible for the interest from the time the PLUS Loan is disbursed until it's paid in full. Students should be aware that Graduate PLUS loans are subject to credit approval by the Department of Education.

### **Financial Support from the Graduate Program in Biomedical Sciences**

The following only applies for tuition and fee waivers and financial assistance from UCC. Faculty members are encouraged to use this guide if compatible with their source of funding.

UCC offers different financial assistance mechanisms to qualified graduate students, as funds allow. The awards may be in the form of fellowships and/or tuition waivers. In addition to the above, graduate students may qualify and apply for other forms of financial aid (loans, etc.) through the University's Financial Aid Office, private foundations and government agencies.

#### **Graduate Fellowships**

Graduate fellows support faculty in classrooms, research or administrative endeavors. Fellowships are awarded on the basis of a student's demonstrated academic achievement and promise. Recipients are required to maintain strong academic records and a good academic standing status. The good academic standing status will be evaluated every semester.

Financial assistance generally available from the Office of the Associate Dean for Research and Graduate Studies (OADRGS) and those departments/faculty that have government, foundation, business and industrial research grants and contracts. Institutional funds available to departments and faculty members can be used to support domestic or international students.

#### **Tuition and Fee Waiver**

Tuition and fee waivers are awarded on the basis of a student's demonstrated academic achievement and promise.

Recipients are required to maintain strong academic records and a good academic standing status. The good academic standing status will be evaluated every semester.

Students are responsible for the following fees/expenses:

- Software Fee
- Endowment Fee
- Accident Insurance
- Parking permit
- CPR course, when applicable
- Student ID, when applicable
- Graduation Fee, when applicable
- Dissertation/Thesis printing fee, when applicable
- Medical insurance, when applicable
- Disability Insurance

## Eligibility

Eligibility requirements vary and are established by the funding source.

To be eligible a graduate student must remain in good academic standing. Students are awarded support on the basis of academic potential.

To be eligible for UCC financial support a student must:

- Be enrolled in a Ph.D. program without any restrictions.
- Be enrolled as a full-time student.
- Have completed all first year courses of the Graduate Program in Biomedical Sciences.
- May not have been in the GPBS for more than 60 months.
- Make satisfactory academic progress towards the degree, as described below and in the Graduate Program in Biomedical Sciences Catalog.
- Have a minimum cumulative grade point average (GPA) of 3.25 at the end of every semester.
- Complete a minimum of eighteen (18) credit hours each academic year.
- Cannot have any other employment, stipends or non-compensated work in detriment of full-time pursuit of the degree if receiving a full stipend (\$20,976). UCC funding can be used to complement other financial assistance being received by the student, if the amount does not surpass \$20,976.
- Must keep appointments with the advisors and provide written reports as requested of any academic plans, activities, and status.
- Will serve as mentors to junior graduate students.
- Attend seminars and workshops organized by the Graduate Program in Biomedical Sciences.
- Submit monthly progress reports to the OADRGS.

International students must provide evidence of a current and valid visa before receiving payment. The Registrar's Office will be provided with a GPBSF 20 Notification of Stipend / Tuition & Fees Payment to evidence that the student will be financially supported as part of the I-20 issuance process.

## Selection Process

The Office of the Associate Dean for Research and Graduate Studies will make offers to the most outstanding candidates. Each candidate will be evaluated on his/her academic excellence.

Awards are granted on a competitive basis for one semester, renewable up to the point that the student reaches 60 months in the GPBS. Automatic renewal within the academic year (from

one semester to the other) will be granted as long as the student is enrolled and is in good academic standing.

### **Appointment and Notification**

Each academic year, the Graduate Program in Biomedical Sciences will notify graduate students with award letters that state the amount, term of appointment and conditions of the award.

Graduate students will sign an award contract to indicate acceptance of the award and its conditions.

### **Minimum Course Load**

All graduate students receiving support must enroll for at least eighteen (18) credit hours each year.

Courses taken for audit are not counted toward the enrollment requirement.

All students are subject to the continuous enrollment rules published in the Graduate Catalog.

### **Loss of Eligibility**

Academic standing (credit hours earned, etc.) of all students who have received financial awards will be reviewed annually. Students who are not in good academic standing will lose their eligibility for financial assistance from UCC.

Students will lose their eligibility if any of the following occurs:

- Cumulative GPA drops below 3.25 at the end of the semester.
- Fails to earn the eighteen (18) minimum credit hours required per year.
- Transfer from a doctoral program to a master's program.
- Fails to register as a full-time student.
- Fails to satisfactorily perform their teaching, research or administrative duties.
- Do not submit 2 monthly reports in a semester.
- Do not attend 3 seminars in a semester.

The Graduate Program in Biomedical Sciences will notify graduate students in writing of a determination to suspend the award contingent to any of the previous situations.

### **Termination of Appointments**

Graduate fellowships normally end when the term of appointment is concluded and the term of the assistantship agreement is fulfilled. An appointment may also end when the grant or contract supporting the student expires, even if that occurs before the end of the student's current appointment. Otherwise, a graduate fellowship may be terminated for the following reasons:

- Resignation by the student. Such resignation will be in writing.

- Failure of the graduate student to perform assigned duties adequately. Such termination is to be recommended by the mentor to the Graduate Program in Biomedical Sciences.
- Failure of the graduate student to remain in good academic standing or to adhere to enrollment policies.
- Failure to comply with the conditions stipulated above.

Any funds remaining after termination of a graduate fellowship revert to UCC and may be reallocated to another graduate student.

A graduate student who believes that his or her graduate fellowship has been terminated unjustly may appeal the decision in writing.

### **Appeals**

All appeals must be submitted to the Graduate Program in Biomedical Sciences Office. Students may appeal financial assistance rejections based on unsatisfactory academic standing. Appeals will be considered if one of the following has a bearing on their academic standing, for the term in which good academic standing requirements were not met, and can be documented in writing.

- Change of grades.
- Death or serious illness of an immediate family member (parent, legal guardian, sibling, spouse or a family member residing at student's home). A copy of a death certificate and a notarized statement proving relative lived with the deceased are required.
- Serious illness or injury to the student or a dependent child (a physicians' affidavit signed by the attending physician is required).
- Other causes that may be determined (natural disaster, act of God, etc.)

An appeal must be submitted in writing within 30 days after notification of assistance termination. The decision of the Appeals Committee is final. The Appeals Committee will be composed of the Dean of Academic Affairs, the Dean of Student Affairs and the Associate Dean for Research and Graduate Studies.

All supporting documents (physician's affidavit, copy of death certificate, etc.) must accompany the student's written appeal that outlines his/her reasons for making an appeal.

The Associate Dean for Research and Graduate Studies will reconsider any student who is denied financial assistance at such time that their academic record improves to the minimum requirement.

### **Administrative Procedures**

- Students will be paid through fellowships.
- The Graduate Programs in Biomedical Science Form 20 will be completed not a PAAP.
- Students will be paid monthly, at the end of the month.

### **Exceptions**

The President of the University must approve any exceptions to the stipulated procedures.

## **REGISTRAR'S OFFICE**

The Registrar's Office is responsible for the registration of students, for the filing of the student's academic record and for the preparation and/or remittance of transcriptions and certificates dealing with the fulfillment of the requirements for the degrees conferred by the University.

Official transcripts and other certified documents would be sent directly to the concerned college, university, industrial firm, or other parties upon payment of the corresponding fee. Students may obtain non-official copies of their academic record upon payment of the corresponding fee.

Students, who consider that there are errors in their transcripts, shall communicate those concerns to the Registrar's Office within 30 days after receipt of the document in question.

### **Registration**

All students must register according to the time schedule prepared by the Registrar's Office. A student who satisfies all admission requirements and is admitted to the Program becomes a regular student. Failure to obtain a grade index of at least 2.5 during the first calendar year automatically dismisses the student from the Program. A student with a grade index above 2.5 but below 3.0 will be on probation for the next academic year, at the end of which he/she will be dismissed if his/her grade index is not 3.0 or better.

No one may be enrolled as a regular or special degree-seeking student in the Graduate Program in Biomedical Sciences without the approval of the Associate Dean for Research and Graduate Studies.

### **Diplomas**

The diplomas will be distributed by the Registrar's Office. All claims pertaining to the diplomas should be made no later than one year after the commencement date.

### **Change in Address**

All changes in address should be registered with the Registrar's Office. Otherwise, the Registrar's Office will not be responsible for the student not receiving pertinent information from the University.

**TUITION AND FEES**

Payments of tuition and other fees are due at the time of registration, unless otherwise indicated pursuant to the Rules and Regulations of the University dealing with postponement of payment of tuition and other fees.

Admission, with application	\$ 50.00 non-refundable
Readmission, with application	\$ 50.00 non-refundable
Deposit to hold place	\$ 100.00 non-refundable

**Tuition**

Regular students, per credit	\$ 335.00
Auditing students	\$ 200.00

**Other fees**

General fee	\$ 400.00 annual
Technology Resources	\$ 600.00 annual
Activity fee	\$ 50.00 annual
Laboratory Fee	\$ 500.00 annual
Endowment Fee	\$ Variable*
Software Fee	\$ 60.00 annual
CPR course	\$ 50.00 per course
ID Card	\$ 15.00
ID Card Replacement	\$ 15.00
Parking per year	\$ 40.00 annual
Parking label replacement	\$ 10.00
Accident insurance	\$ 12.00 annual
Disability insurance	\$ 75-105**
Graduation	\$ 250.00
Thesis printing and binding (3 copies)	\$ 200.00

**Fees for other services**

Lockers	\$ 10.00 annual non-refundable
Affidavit	\$ 63.00 each
Study certification	\$ 10.00
Grade Certification	\$ 10.00
Copy of Diploma	\$ 10.00
Duplicate of the Diploma	\$ 50.00
Translation of Diploma	\$ 25.00
Student File Copy	\$ 2.00 per sheet
Transcripts	\$ 5.00 each
Fax transmission	\$ 1.00 per sheet
Health Insurance Plan	Cost Vary***

\* Endowment Fee:

2020	\$900
2021	\$950
2022	\$1000

\*\*According to Insurance rates.

\*\*\*All students are required to carry a health insurance plan. If the student has no insurance, the University will provide one at market cost. These costs may change per semester.

**Reimbursement of Tuition fees**

The policy for reimbursement of tuition fees is determined by the Office of Financial Resources. Please refer to the appropriate manual.

**GRADING POLICY**

Grades at the end of each term are assigned according to the following letter system:

Grade	Points	
A	4	Excellent
B	3	Good
C	2	Satisfactory
F	0	Failure
I	--	Incomplete coursework
N	--	Non reported
W	--	Authorized withdrawal
U	--	Unauthorized withdrawal
WP	--	Withdrawal passing
WF	--	Withdrawal failing
P	--	Passed*
H	--	Passed with honors
NC	--	Noncredit course
IP	--	In Progress

\*Each department may propose through the Graduate Program in Biomedical Sciences Committee graduate courses for pass/fail (P/F) designation.

A grade of “I” indicates assigned work yet to be completed in the term. The grade of “I” becomes an “F” if not removed by the end of the following term according to the following schedule: “I” grades from the first semester become “F” if not removed by the end of the second semester; “I” grades from the second semester and for the summer session become “F” if not removed by the end of the first semester of the incoming academic year. An “I” grade cannot be changed to a W under any circumstances. The grade of “I” on the thesis does not become an “F” at the beginning of the next term or session and will remain as such until the evaluation of the thesis is submitted.

**Academic Honors**

Academic honor will be given to those students who have obtained the following cumulative averages, after completing the Program’s requirements.

HONOR	CQPI
Summa Cum Laude	3.75 to 4.00
Magna Cum Laude	3.50 to 3.74
Cum Laude	3.25 to 3.49



## Formal Grade Appeal Procedure

The student must initiate formal grade appeals by the end of the eighth week of the semester following the award of the grade. The instructor may change a grade if it is found that there was an error. Except for changes made by the instructor, grades shall not be changed except through the appeal process.

Normally, any differences of opinion between an instructor and student concerning a grade should be resolved between the individuals involved. If the instructor of record will not be available within one semester, the department chair or designee may act in lieu of the instructor of record for the purpose of grade appeals. If the instructor and student cannot resolve their differences of opinion, the student must present a written brief outlining the problem and the area of disagreement to the department chair. After notification by the department chair that a grade appeal brief has been filed, the instructor must respond to the department chair in writing within ten working days. The department chair or designee will attempt to serve as mediator working with the individuals to resolve the dispute. If this mediation proves unsuccessful, the department chair shall forward the student's brief to the Office of Associate Dean for Research and Graduate Studies (OADRGS).

The OADRGS or designee will review the findings to date and will attempt to act as a mediator in resolving the dispute. If mediation does not lead to resolution, then the OADRGS shall form a Grade Appeal Committee within ten working days. This committee shall include three faculty members: one selected by the instructor of record, one by the student appealing the grade, and one by the Dean of Academic Affairs.

The committee shall elect its own chair. A simple majority shall prevail in the committee.

All pertinent data, papers, records, etc., together with written briefs, will be submitted to this Committee for study. Both student and instructor will have permission to view, but not copy, all materials used by the Committee. The Committee may meet individually or collectively with those involved in its quest for determination, and the Committee may choose to continue mediation efforts. Each party may bring another person with them as support or spokesperson at any stage in the process. The student or instructor has the option of meeting with the Committee without the other party present.

The function of the Grade Appeal Committee shall be to evaluate the grading procedures as well as to, if necessary, re-evaluate the student's assignments for the course in terms of criteria established by the instructor of the course. The Committee's decision may be to keep the assigned grade, or to raise the assigned grade.

The Committee shall provide a written justification to the OADRGS for its decision. The OADRGS shall inform the student and the instructor of the Committee's ruling and provide both parties with copies of the Committee report.

In the case of a change of grade, if the instructor of record does not implement the change of grade decided upon by the Committee, the OADRGS shall implement the change of grade on the student's official transcript through the ordinary change of grade procedure. This shall be the last step in the deliberation of the formal grade appeal.

### **STUDENT STATUS IN THE PROGRAM**

The Graduate Program in Biomedical Sciences Committee will review students' records in May, for those students admitted in August of the previous year, and in December for students admitted in January (completion of two semesters in the program).

The resulting action depends upon the grade point average (GPA) on a four-point scale, as follows:

1. To be in good academic standing, the student must have a GPA of 3.0 or higher.
2. Students attaining a GPA below 2.5 will be dismissed from the Program.
3. If the grade index is below 3.0 but above 2.5, the student will be placed on probation for the following academic year, at the end of which he/she will be dismissed if his/her grade index has not improved to 3.0. Students on probation are not eligible for financial aid.
4. Students obtaining a failing grade (F) on a course will be dismissed from the program.
5. A student may repeat a course once, after withdrawing. The student must retake the course the next time that is offered. If the student does not approve the course during his/her second attempt the student will be dismissed from the program.
6. Students that obtain a grade of C may repeat the course once. The student must retake the course the next time that is offered. The higher of the two grades obtained will be used to calculate the GPA. Students may not repeat more than three total courses.

A student that has been dismissed from the Program may appeal their cases to the Graduate Program in Biomedical Sciences Committee. The Committee will review the student's record and will make the pertinent decision on whether to readmit the student. Once dismissed from the program a student will not enroll in graduate courses under any student classification, for example non-degree student.

All grades on courses not offered at the institution but approved by the Thesis Committee as part of the program of study will also be included in the GPA calculation. Withdrawals, pass/fail credit and transfer courses are not included in the calculation of the GPA. Transferred courses are defined as those completed while not enrolled at UCC.

A certified letter is mailed to each student placed on probation or dismissed.

### **WITHDRAWAL PROCEDURES**

1. The deadline for withdrawal from a course with a grade of "W" may be any date prior to 50% to completion of the course, afterwards the student will be assigned a grade of WF or WP (if evaluated).
2. The deadline for withdrawal without "W" will be before 10% after the beginning of the course.
3. The procedure for withdrawal is as follows: the student must provide written notification to the graduate program coordinator of the program he/she is enrolled in advising what course(s) he/she intends to withdraw. The student should file the withdrawal application at the Registrar's Office.
4. Authorized withdrawals will be allowed before the course final exam.
5. Unauthorized withdrawals constitute grounds for dismissal from the Program.

## **READMISSIONS**

Students who have previously been enrolled in the Program and withdrawal without authorization, withdrawal with authorization or have not maintained their active status in the Program and desire to continue or complete the degree requirements must apply for readmission to the Program through the Office of Admissions. All readmission applications must be received by the Program's admission deadline for the academic session in which the student wants to continue his/her studies. Interested candidates must submit transcripts of any other coursework taken outside UCC during the time of absence from the Program.

The maximum interruption allowed in the program of study is two years and only one readmission will be granted to the student.

## **TRANSFERS**

### **Transfer Students**

Students who desire admission into the Graduate Program in Biomedical Sciences as transfer students from another graduate program of an accredited institution will be considered for admission if they fulfill all admission requirements. The applicants must request that the institution from which they wish to transfer submit all pertinent documentation. The Graduate Program in Biomedical Sciences Committee will evaluate the student academic record and will recommend to the Registrar's office the transfer of coursework as applicable.

### Transfer of Courses (Credits)

Transfer of graduate credit hours will be accepted for the Ph.D. degree provided the grades in those courses transferred are of a B or higher and the courses are equivalent in content and depth to those offered by the UCC Graduate Program in Biomedical Sciences.

Transfer courses at the graduate level must have been taken within the past five years.

Students in the Program who are authorized to take courses outside of UCC must submit transcripts of any coursework taken to be included in their UCC transcript.

No credits used for a completion of a BS or PhD degree will be transferred.

Transfer of graduate credit hours will be accepted for the Ph.D. degree provided the grades in those courses transferred are B or higher and the courses are equivalent in content and depth to those offered by the UCC Graduate Program in Biomedical Sciences. Courses must have been taken in the last five years and no more than 18 credits will be allowed to be transferred.

A maximum of 9 credits hours of approved coursework will be accepted for the MS/MA degree, provided the grades in those courses are B or better, the courses are equivalent to those offered by the Graduate Program in Biomedical Sciences and they satisfy departmental requirements.

All transfer credits must be verified by an official transcript from the institution at which the work was completed.

All credits transferred to UCC must have been completed at an accredited institution.

Acceptance of graduate credit for work done at other graduate institution must be approved by the student's advisory committee and the Associate Dean of Graduate Studies. Courses to be considered for transfer credit must have been completed within five years.

Valid transfer credits will appear on the student's transcript as credits earned.

Under no circumstances will transfer credit be awarded for courses in which a grade lower than B, or its equivalent, has been received or for courses graded on a pass/fail basis, for continuing education units, courses completed outside the five-year time limit, correspondence, extension, or in-service courses.

**Procedure for Transfer of Courses (Credits):**

To have courses considered for transfer, students must discuss their plan to use specific courses from other institutions with their major advisor and/or advisory committee. Students will complete GPBSF 18 to request approval.

Within the guidelines established by the Graduate Program in Biomedical Sciences, the advisory committee will identify courses acceptable for transfer and will record these courses on the student's Program of Study, GPBSF 1.

The student must have an official transcript sent from the institution(s) where credit was earned to the UCC Registrar's Office. Only when courses have been verified by the OADRGS will they be approved for application toward the degree.

Under no circumstances will transfer credit be awarded for research, internships, master's thesis or doctoral dissertation work performed outside of UCC. While, at the discretion of a program faculty, a student's research project from another institution might be accepted for continuation once enrolled at UCC, the required number of credit hours must be enrolled in and successfully completed to meet the requirements for graduation with a master's or a doctorate degree, respectively.

**Transfer between Programs**

Students may transfer between the PhD and MS/MA programs or between MS/MA programs. The student must complete the reclassification document in the Registrar's Office and pay the reclassification fee. The student must also complete Graduate Programs in Biomedical Sciences Form 8. The signature of approval of the chair of the department of origin is not required, but is recommended. In cases where the chair of the department of origin does not agree with the transfer, the Associate Dean for Research and Graduate Studies may approve the transfer of the student.

Students transferring from the MS to the MA may transfer up to 3 credits of research. For the credits to be transferred the student must have presented the research at a scientific meeting, written a report about the research performed and have the approval of the research mentor.

For a MS/MA student to transfer to a PhD program, the student must be in good academic standing.

Once a student has transferred from a PhD program to a MS/MA program, the MS/MA must be completed before the student is allowed to request admission into a PhD program.

## LEAVES OF ABSENCE

Universidad Central del Caribe (UCC) processes and reports changes in student enrollment status in a manner consistent with the requirements of Title IV of the Higher Education Act of 1965, as amended ("Title IV"). The UCC must comply with Title IV when reporting changes in student enrollment status and returning unearned Title IV funds, where necessary, to avoid enhanced oversight and monitoring requirements by the U.S. Department of Education, loss or repayment of funds, or ability to participate in federal student aid programs.

Students who wish or need to interrupt their study temporarily may request a leave of absence (LOA). There are three types of leave: personal, medical, and parental. Students will complete the request form at the Registrar's Office. The general policies that apply to all types of leave are:

All leaves of absence must be approved by the Associate Dean for Research and Graduate Studies on the recommendation of the mentor. Medical leaves also require the recommendation of a physician, as described below; see Medical Leave of Absence.

Students in the Program may be granted a leave for a maximum of 180 days in a 12-month period. An excess of this maximum will be considered a withdrawal for Title IV purposes (Policy: Processing and Reporting Changes in Student Enrollment Status Under Title IV, 2019).

Students may be granted more than one leave of absence as long as the total amount of time does not exceed 180 days in a 12-month period.

The time limit for completing the degree will not be extended as a result of an approved Leave of Absence.

Students on leave may complete, by the appropriate deadline for the term in which the course was taken, outstanding work in courses for which they have been granted approved incompletes. They may not, however, fulfill any other degree requirements during the time on leave. Students who intend to work toward the degree while away from the University must request registration in absentia. Students who in fact make progress toward the degree while on leave will have their registration changed retroactively to in absentia for the period of the leave.

Students on leave of absence do not have to file a formal application for readmission. However, they must notify the Graduate Program in Biomedical Sciences Office in writing of their intention to return. Such notification should be given at least six weeks prior to the end of the approved leave.

### **Personal Leave of Absence**

A student who is current with his or her degree requirements and who wishes to interrupt study temporarily may request a personal leave of absence. The general policies governing leaves of absence are described above. Students are eligible for personal leaves after satisfactory completion of at least one year of study.

To request a personal leave of absence, the student must write to the Associate Dean for Research and Graduate Studies explaining the reasons for the proposed leave and stating both the proposed start and end dates of the leave and the address at which the student can be reached during the period of the leave. If the Associate Dean finds the student to be eligible, the leave will be granted. In any case the student will be informed in writing of the action taken. Students who do not apply for a leave of absence, or who apply for a leave but are not granted one, and who do not register for any term, will be considered to have withdrawn from the Graduate Program in Biomedical Sciences.

Students on a personal leave of absence are not eligible for financial aid, including loans, or for the use of University facilities normally available to registered students. Students granted a personal leave may continue to be enrolled in the UCC health plan by purchasing coverage.

### **Medical Leave of Absence**

A student who must interrupt study temporarily because of illness or injury may be granted a medical leave of absence with the approval of the Associate Dean for Research and Graduate Studies, on the written recommendation of a physician. Final decisions concerning requests for medical leaves will be communicated to students in writing.

The Graduate Program in Biomedical Sciences (GPBS) reserves the right to place a student on a medical leave of absence when, on the recommendation of the Dean of Student Affairs, the GPBS determines that the student is a danger to self or others because of a serious medical problem. A student who is making satisfactory progress toward his/her degree requirements is eligible for a medical leave any time after matriculation. Before re-registering, a student on medical leave must secure written permission to return from a physician.

Students on medical leave of absence are not eligible for financial aid, including loans, or for the use of University facilities normally available to registered students.

### **Family Leave of Absence**

A student who is making satisfactory progress toward his/her degree requirements and wishes to, or must, interrupt study temporarily for reasons of pregnancy, maternity or paternity care, or care for a family member, may be granted a family leave of absence. Any student planning to have or care for a child is encouraged to meet with the Associate Dean for Research and Graduate Studies to discuss leaves and other short-term arrangements. For many students short-term arrangements, rather than a leave of absence, are possible. A student who is making satisfactory progress toward his/her degree requirements is eligible for a leave of absence for parental responsibilities any time after matriculation.

Students on leave of absence for parental responsibilities are not eligible for financial aid, including loans, or for the use of University facilities normally available to registered students.

## STUDY PROGRAMS IN THE BIOMEDICAL SCIENCES

The Graduate Program in Biomedical Sciences offers six different study programs:

1. Doctor of Philosophy in Cellular and Molecular Biology
2. Doctor of Philosophy in Neurosciences
3. Master of Science (MS) in Biomedical Sciences
  - Anatomy and Cell Biology
  - Biochemistry
  - Microbiology and Immunology
  - Pharmacology
  - Physiology
4. Master of Science in Neuroscience
5. Master of Arts (MA) in Biomedical Sciences
6. Master of Arts (MA) in Biomedical Sciences in
  - Anatomy and Cell Biology
  - Physiology
  - Microbiology and Immunology

## GRADUATE STUDENT COMPETENCIES

**PhD in Cell and Molecular Biology graduates and PhD in Neurosciences graduates** will be able to: (Revised 2019)

1. Demonstrate well-developed and updated knowledge of concepts, sub-specialties, research techniques and of other specific aspects of cellular and molecular biology and neuroscience.
2. Design original and rigorous research and be able to define a research question, formulate a hypothesis, and analyze and interpret research data.
3. Establish and conduct a scientific protocol.
4. Demonstrate proficiency in quantitative, analytical and technical skills for successful execution of reproducible research and problem solving.
5. Adhere to rigorous ethical standards, regulatory and legal principles when conducting research and interacting within the profession and in the rest of the society; respecting the dignity, worth, equality, diversity and privacy of all persons and following a decision-making process congruent with such principles and standards.
6. Exhibit effective professional skills necessary for: career management, team working and collaboration, network building, solving complex problems in unpredictable situations, and pursuing learning and development.
7. Demonstrate effective skills in active listening, verbal communication, public speaking, and written communication focused towards scientific and general audiences.
8. Plan, deliver and evaluate teaching and training activities such as tutorials, lectures, small group activities, use of information communication technologies (ICT), and seminars.



**M.A./M.S. Program in Biomedical Sciences  
Specialization in Anatomy and Cell Biology**

Graduates will be able to:

1. Demonstrate a general knowledge of the principal areas of anatomy: macroscopic anatomy, histology, embryology, and neuroanatomy.
2. Demonstrate a general knowledge of biochemistry and cell biology.
3. Apply knowledge in anatomy and cell biology to the development of scientific projects (M.S.).
4. Interpret the scientific literature to support hypothesis and project development (M.S.).
5. Apply the contemporary techniques used within the area of research (M.S.).
6. Apply current technology and scientific methodologies for problem solving (M.S.).
7. Conduct an experiment to test a hypothesis (M.S.).
8. Demonstrate the necessary written and oral skills to effectively articulate an idea or thought.
9. Demonstrate the use of scientific literature required to continue their professional development throughout their career.
10. Demonstrate the required professional skills to collect, organize, and analyze scientific data.
11. Use scientific information including primary research articles, mass media sources, and World Wide Web information.
12. Apply professional standards related to the publication and dissemination of research results.
13. Demonstrate a professional attitude when interacting with individuals of diverse cultures, races, and genders.
14. Demonstrate a professional attitude and manners in the behavior towards their peers, institutional staff, and faculty.

**M.S. Program in Biomedical Sciences  
Specialization in Biochemistry**

Graduates will be able to:

1. Demonstrate a general knowledge of biochemistry and cell and molecular biology.
2. Apply knowledge in biochemistry to the development of scientific projects.
3. Interpret the scientific literature to support hypothesis and project development.
4. Apply the contemporary techniques used within the area of research.
5. Apply current technology and scientific methodologies for problem solving.
6. Conduct an experiment to test a hypothesis.
7. Demonstrate the necessary written and oral skills to effectively articulate an idea or thought.
8. Demonstrate the use of scientific literature required to continue their professional development throughout their career.
9. Demonstrate the required professional skills to collect, organize, and analyze scientific data.
10. Use scientific information including primary research articles, mass media sources, and World Wide Web information.
11. Apply professional standards related to the publication and dissemination of research results.
12. Demonstrate a professional attitude when interacting with individuals of diverse cultures, races, and genders.
13. Demonstrate a professional attitude and manners in the behavior towards their peers, institutional staff, and faculty.

**M.S. Program in Biomedical Sciences  
Specialization in Microbiology and Immunology**

Graduates will be able to:

1. Demonstrate a general knowledge of the principal areas of microbiology and immunology: bacteriology, mycology, parasitology, virology and immunology.
2. Demonstrate a general knowledge of biochemistry and cell biology.
3. Apply knowledge in microbiology and immunology to the development of scientific projects (M.S.).
4. Interpret the scientific literature to support hypothesis and project development (M.S.).
5. Apply the contemporary techniques used within the area of research (M.S.).
6. Apply current technology and scientific methodologies for problem solving (M.S.).
7. Conduct an experiment to test a hypothesis (M.S.).
8. Demonstrate the necessary written and oral skills to effectively articulate an idea or thought.
9. Demonstrate the use of scientific literature required to continue their professional development throughout their career.
10. Demonstrate the required professional skills to collect, organize, and analyze scientific data.
11. Use scientific information including primary research articles, mass media sources, and World Wide Web information.
12. Apply professional standards related to the publication and dissemination of research results.
13. Demonstrate a professional attitude when interacting with individuals of diverse cultures, races, and genders.
14. Demonstrate a professional attitude and manners in the behavior towards their peers, institutional staff, and faculty.

## **M.S. in Neurosciences**

Graduates will be able to:

1. Demonstrate a general knowledge of the principals areas of Neuroscience
2. Demonstrate a general knowledge of biochemistry and cell and molecular biology.
3. Apply knowledge in neuroscience to the development of scientific projects.
4. Interpret the scientific literature to support hypothesis and project development.
5. Apply the contemporary techniques used within the area of research.
6. Apply current technology and scientific methodologies for problem solving.
7. Conduct an experiment to test a hypothesis.
8. Demonstrate the necessary written and oral skills to effectively articulate an idea or thought.
9. Demonstrate the use of scientific literature required to continue their professional development throughout their career.
10. Demonstrate the required professional skills to collect, organize, and analyze scientific data.
11. Use scientific information including primary research articles, mass media sources, and World Wide Web information.
12. Apply professional standards related to the publication and dissemination of research results.
13. Demonstrate a professional attitude when interacting with individuals of diverse cultures, races, and genders.
14. Demonstrate a professional attitude and manners in the behavior towards their peers, institutional staff, and faculty.

**M.S. Program in Biomedical Sciences  
Specialization in Pharmacology**

Graduates will be able to:

1. Demonstrate a general knowledge of pharmacology.
2. Demonstrate a general knowledge of biochemistry and cell biology.
3. Apply knowledge in pharmacology to the development of scientific projects.
4. Interpret the scientific literature to support hypothesis and project development.
5. Apply the contemporary techniques used within the area of research.
6. Apply current technology and scientific methodologies for problem solving.
7. Conduct an experiment to test a hypothesis.
8. Demonstrate the necessary written and oral skills to effectively articulate an idea or thought.
9. Demonstrate the use of scientific literature required to continue their professional development throughout their career.
10. Demonstrate the required professional skills to collect, organize, and analyze scientific data.
11. Use scientific information including primary research articles, mass media sources, and World Wide Web information.
12. Apply professional standards related to the publication and dissemination of research results.
13. Demonstrate a professional attitude when interacting with individuals of diverse cultures, races, and genders.
14. Demonstrate a professional attitude and manners in the behavior towards their peers, institutional staff, and faculty.

**M.S. Program in Biomedical Sciences  
Specialization in Physiology**

Graduates will be able to:

1. Demonstrate a general knowledge of the principal areas of Physiology: cardiopulmonary, endocrine, gastrointestinal, neuromuscular, renal reproductive and reticuloendothelial physiology.
2. Demonstrate a general knowledge of biochemistry and cell biology.
3. Apply knowledge in physiology to the development of scientific projects (M.S.).
4. Interpret the scientific literature to support hypothesis and project development (M.S.).
5. Apply the contemporary techniques used within the area of research (M.S.).
6. Apply current technology and scientific methodologies for problem solving (M.S.).
7. Conduct an experiment to test a hypothesis (M.S.).
8. Demonstrate the necessary written and oral skills to effectively articulate an idea or thought.
9. Demonstrate the use of scientific literature required to continue their professional development throughout their career.
10. Demonstrate the required professional skills to collect, organize, and analyze scientific data.
11. Use scientific information including primary research articles, mass media sources, and World Wide Web information.
12. Apply professional standards related to the publication and dissemination of research results.
13. Demonstrate a professional attitude when interacting with individuals of diverse cultures, races, and genders.
14. Demonstrate a professional attitude and manners in the behavior towards their peers, institutional staff, and faculty.

## GRADUATION REQUIREMENTS

**A MS/MA or PhD student must complete all the requirements and have turned in the final version of his/her thesis/dissertation in order to participate in the Commencement Ceremony.**

Student must remain enrolled until completing all graduation requirements and delivering the final version of their thesis / dissertation.

### **Ph.D. Degree**

Early in the doctoral work, a dissertation subject is chosen in the major field of study and approved by the dissertation committee. The dissertation must represent original investigation that contributes new knowledge to the candidate's field. Upon completion of at least four (4) years of graduate study and a dissertation, the candidate must pass a dissertation defense.

- a. Grade index: 3.0 or above
- b. Credits As stipulated by the program of study, 72 credits minimum.
- c. Residence: A minimum of 36 credits must be completed at UCC.
- d. Time limitations: A maximum of 7 years to satisfy all the requirements.
- e. Candidacy examination: Required of all students
- f. Dissertation defense: Required of all students
- g. Authorship: First author in at least one (1) manuscript or co-author in at least two (2) manuscripts accepted for publication in a peer-reviewed journal, which incorporates work that was performed by the student and is included in the student's dissertation. Brief / short communications do not necessarily meet this requirement. The dissertation committee must approve brief / short communications.

### **MS/MA Degree**

- a. Grade index: 3.0 or above
- b. Credits: As stipulated by the program of study, 36 credits minimum.
- c. Residence: A minimum of two year of full-time work must be completed at UCC
- d. Time limitations: A maximum of 4 years to complete all the requirements
- e. Comprehensive examination Required of all MS and MA candidates
- f. Thesis defense: Required of all MS candidates

The student must deliver the approved dissertation/thesis electronically according to the Dissertation/Thesis Manual, to complete the graduation requirements and receive his/hers diploma. The Graduate Program in Biomedical Sciences will print and bind three (3) copies of the thesis (one for the student, one for the department or Mentor, and one for the library).



UNIVERSIDAD CENTRAL DEL CARIBE  
 Graduate Program in Biomedical Sciences Office  
 GPBSF 24

**Graduation Requirements Check List**

Name: \_\_\_\_\_

Student ID: \_\_\_\_\_

Program: \_\_\_\_\_

To be completed before signing the "Autorización de Entrega Diploma" document of Registrar Office.

PhD ✓	MS ✓	MA ✓	Requirements
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Grade Index: 3.0 or above
<input type="checkbox"/>			Credits: As stipulated by the program of study, 72 credits minimum.
	<input type="checkbox"/>	<input type="checkbox"/>	Credits: As stipulated by the program of study, 36 credits minimum.
<input type="checkbox"/>			Residence: A minimum of 36 credits must be completed at UCC.
	<input type="checkbox"/>		Residence: A minimum of two years of full-time work must be completed at UCC
<input type="checkbox"/>			Time limitations: A maximum of 7 years to satisfy all the requirements.
	<input type="checkbox"/>	<input type="checkbox"/>	Time limitations: A maximum of 4 years to complete all the requirements
<input type="checkbox"/>			Candidacy examination.
	<input type="checkbox"/>	<input type="checkbox"/>	Comprehensive examination.
<input type="checkbox"/>	<input type="checkbox"/>		Dissertation or thesis defense.
<input type="checkbox"/>			First author in at least one (1) manuscript or co-author in at least two (2) manuscripts accepted for publication in a peer-reviewed journal
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pay graduation fees to Cashier's Office
<input type="checkbox"/>	<input type="checkbox"/>		Pay printing and binding (3 copies) fees to Cashier's Office
<input type="checkbox"/>	<input type="checkbox"/>		Deliver the approved dissertation/thesis electronically
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Graduate Program forms completed.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete Alumni Contact Information (GPBSF11)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete Exit Survey (GPBSF12)



## **Time Limitations**

### **Ph.D. Degree**

Students will be allowed a maximum of seven years to complete the degree requirements.

### **MS/MA Degree**

Students will be allowed a maximum of four years to complete the degree requirements.

The student must complete all requirements by June 30 of his fourth year, the last day of the academic year. Under exceptional circumstances, the Graduate Program in Biomedical Sciences Committee may extend these periods for one (1) year.

### **Extension Request Procedure**

The student will write a letter explaining the need for the extended period and the reasons why he/she could not complete the degree in the allowed time. The mentor will write a letter agreeing to continue being the mentor of the student and detailing a plan for the student to complete the graduation requirements in a year period. The Graduate Program in Biomedical Sciences Committee will examine the documents presented and render a decision.

## **PROGRAM ACADEMIC REQUIREMENTS**

### **Academic Program Advice**

The Coordinator for the Graduate Program in Biomedical Sciences in each department will be responsible for the academic advice to the graduate students in his/her department. The mentor or graduate program coordinator will prepare the student's program of study. The Coordinator will help the student in attaining his/her educational goals. To this end, the Coordinator will participate in the preparation, supervision and evaluation of the student's academic program.

### **Language Requirements**

Knowledge of English and Spanish is a basic requirement for study in the Program. The student is expected to possess verbal and written proficiency in both languages. Student's language abilities will be assessed during the interview. If a student is not able to participate in the interview in person, (s)he must include an official report of their Test of English as a Foreign Language (TOEFL) scores with their application.

Seminars, bibliographic reports, dissertation/thesis, proposal defenses and candidacy exams will be in English.

### **Graduation**

Students must apply and pay the corresponding graduation fee no later than the date set in the Academic Calendar. Application forms for this purpose are obtained from the Registrar's Office, and must be mailed or delivered together with a copy of the receipt of payment of the \$200.00 non-refundable graduation fee to the Bursar's Office. Non-compliance with these requirements may postpone the conferring of the degree.

### **Maintenance of Active Status**

#### **PhD Degree**

Students are required to enroll in a minimum of eighteen (18) credits each year in order to maintain an active status in the Program for a period not exceeding the time allowed for the completion of the degree.

#### **MS/MA Degree**

Students that have fulfilled all the requirements for the Masters degree except for the Thesis Defense are required to enroll in BMS 899 for zero (0) credits each semester in order to maintain an active status in the Program for a period not exceeding the remainder of the time allowed for the completion of the degree, four years.

#### **Programs of Study**

The program of study must be filed with the Graduate Program in Biomedical Sciences Office. Students may enroll in the courses they understand are relevant to their degree, with the approval of their mentor, within the time limit to complete the program. These programs of study are designed to meet the specific requirements of each student. Once the designated program of study is approved, a student must comply with the course requirements established in his/her program of study to graduate.

#### **Residency**

PhD Student Residence: A minimum of 36 credits must be completed at UCC.

MS/MA Student Residence: A minimum of two year of full-time work must be completed at UCC

### **Research Mentor**

Students must select a mentor by the end of the first year. The mentor will be the chair of the Thesis / Dissertation Committee and will be selected by the student. The mentor must have a doctoral degree and must be actively engaged in research in the case of Ph.D. and M.S. students. The mentor will be responsible for direct supervision of the student's research and will coordinate the comprehensive / candidacy exam. The mentor must hold or request an academic appointment at UCC.

It is the student's responsibility to find an advisor. If the student has not succeeded in doing so within three full semesters after being admitted, the student must leave the GPBS or change his/her status to that of a master degree (non-thesis option) student.

### **MA Mentor**

Students must select a mentor by the end of the first year. The mentor will be in charge of organizing evaluation committees for the student's biographical reports according to the reports discipline. The mentor will be selected by the student with the advice of the chairperson of the department. The mentor will be responsible for direct supervision of the student's academic work and will coordinate the comprehensive exam. The mentor must hold or request an academic appointment at UCC.

### **Bibliographical Reports**

For those students enrolled in the M.A. Program in the Biomedical Sciences, the Associate Dean for Research and Graduate Studies together with the student will select the Bibliographical Reports and his/her mentor.

### **Seminars**

The seminars provide coverage of subjects not included in other graduate courses and serves as a forum for presentation of research proposals, work in progress and completed work by the staff and graduate students. Visiting scientists also participate in the seminars.

Each seminar will be worth 1 credit hour. All faculty members present during the seminar may evaluate the student's seminar presentation. Students will present a maximum of one seminar per day. A minimum of three faculty members must be present in order for a grade to be awarded for the seminar presentation. The seminar will be announced and open to the academic community. GPBSF 14 Seminar Presentation Evaluation Form will be used to evaluate students' presentations.

### **Dissertation / Thesis Committee**

After selecting their research advisor, the student, in consultation with the advisor, will select a committee no later than the first semester of the second academic year. The committee will be composed of three (3) or five (5) members, including the research advisor who will chair the committee. The members will have doctoral degrees. The members of the committee will be UCC faculty members or faculty from other institutions with similar programs, but the majority of the committee must be UCC faculty members. One (1) member of the committee must be a graduate faculty member from outside the advisor's department. The advisor will keep written records of the meetings. The committee and the program of study must be approved by the Graduate Program in Biomedical Sciences Office and should be on file at that Office by the end of the first semester of the second year.

An intensive period of full-time research is the central element of the Ph.D. / M.S. degree. It is the dissertation committee's responsibility to provide an objective evaluation of the project as well as contribute to the selection of specific research directions. While the dissertation committee often has useful suggestions on specific approaches to a particular protocol, a more vital function is to help focus and limit the scope of the research so that the student has, as early as possible, a clear concept of the overall design of the dissertation proposal. Although this concept will change in response to specific experimental findings, it is critical for the student to be guided to define, both in scope and quality, an appropriate research project.

The dissertation committee will monitor the student's research progress on a regular basis, meeting at least once per academic year. A week prior to each meeting, the student will present a written summary of research progress to the committee for review.

### **Dissertation / Thesis**

Under the supervision of his/her mentor and of the Dissertation / Thesis Committee, the candidate shall prepare a thesis embodying the results of his/her investigative efforts in his/her selected major field or area of expertise. The candidate will submit a draft to the mentor and the members of the Committee at least six (6) weeks prior to the commencement date. The members of the committee will be allowed two (2) weeks after the receipt of the draft to propose in writing any changes, deletions, corrections and criticism to the draft. The Committee and the student will meet to discuss the recommendations. The candidate will then have ten (10) days to prepare the final draft of the thesis based on the changes, corrections, etc. submitted by each member of the Committee. The Committee will have two (2) weeks to reexamine the thesis and determine the acceptability of the thesis and the date of the thesis defense. Following your public defense, the student will have 10 days to make changes required by his committee. The committee will have 2 weeks to reexamine the thesis and approve or disapprove it. The student must deliver the approved thesis electronically, according to the Thesis / Dissertation Manual, to complete the graduation requirements and receive his/hers diploma. The Graduate Programs in Biomedical Sciences Office will print and bind three (3) copies of the thesis (one for the student, one for the department or mentor, and one for the library). Make sure that the Graduate School has your current contact information so you can be notified when the bound copies arrive at the Graduate School.

### **Dissertation / Thesis Defense**

In order to be eligible to perform the Dissertation/Thesis defense, the candidate must have approved/completed all graduation requirements (including authorship requirements for Ph.D. students) excluding the Dissertation/Thesis and must have been notified by the Dissertation/Thesis Committee that his/her Dissertation/Thesis is defensible.

The defense will consist of a public presentation of the results and conclusions of the dissertation/ thesis research. The defense will take place at UCC. The defense is an oral defense and the candidate will be examined on the content of the thesis by the Dissertation/Thesis Committee. Other members of the academic community may attend the final examination and participate in the questioning. Once the public portion of the defense is completed, the Dissertation / Thesis Committee will meet privately with the candidate for further evaluation of the student's knowledge of the contents of the dissertation / thesis. A representative of the Graduate Program in Biomedical Sciences will be appointed by the Associate Dean and will act as an evaluator of the process. This representative will be from outside the student's Thesis Committee. The result of the defense will be notified orally and in writing to the candidate. In case of failure, the panel may recommend that the candidate be dismissed from the program or that a second opportunity to defend the thesis be allowed no later than six (6) months from the date of the first defense. A student may defend only twice.

The Graduate Program in Biomedical Sciences Office will make the official announcement for the defense after prior notification; the notification must receive no later than fourteen (14) days prior to the intended thesis defense date.

### **Dissertation / Thesis Defense Approval Form:**

The Request for Permission for Dissertation / Thesis Defense form must be completed and submitted to the Graduate Programs in Biomedical Sciences at least two weeks prior to the final defense. A ballot for the final examination will be sent to the research advisor. After the defense, the original signed ballot must be returned to the Graduate Programs in Biomedical Sciences.

## **Specific Requirements for the Ph.D. Degree**

### **Candidacy Examination**

Ph.D. students in good standing are eligible to take the candidacy examination at the end of their required courses. All Ph.D. students must take a candidacy examination by the end of their third year. If the student does not comply, he or she must choose between the M.S., M.A. or leave the Graduate Program in Biomedical Sciences.

The goal of the candidacy examination is for the faculty to assess the adequacy of the students' background knowledge in their chosen field and their ability for problem solving and for interpretation of important concepts before formally permitting them to continue their doctoral research.

Successful completion of the candidacy examination is required for advancement to doctoral candidacy and must be accomplished at least twelve (12) months prior to the dissertation defense. The dissertation committee is responsible for recommending advancement to candidacy to the Graduate Program in Biomedical Sciences Office.

A representative of the Graduate Program in Biomedical Sciences will be appointed by the Associate Dean to attend the candidacy examination, record the approval of the dissertation committee and assure all Program regulations are followed. This representative cannot be a member of the student's department (MS/MA) nor part of the student's committee.

### **Exam Format**

The candidacy exam will consist of a public defense of a written research proposal. The student presentation must be between 40 and 60 minutes. This will be followed by a closed question session between the dissertation committee and the student. The candidate will have to submit the proposal to the mentor and the members of the Committee at least two (2) weeks prior to the candidacy exam. The written research proposal has to follow the National Institutes of Health F31 guidelines.

A student who is in good academic standing but who fails the examination is allowed one (1) opportunity to retake the exam. In case of failure, the student will be reexamined no later than two (2) months from the date of the first examination. In case of a second failure, the student will be awarded an M.A. degree. The student will not be allowed to reenter the Ph.D. Program.

In case of conditional approval, the student must meet the conditions no later than two (2) months from the date of the first examination.

Ph.D. students that successfully complete the candidacy examination and are not able to complete the Ph.D. graduation requirements will be awarded an M.S. degree.

## **Requirements for the Masters Degree**

### **Comprehensive Examinations**

All students enrolled in the MS and MA Programs must pass a written examination covering the student specialization subjects described in their program of study. In case of failure, the student will be reexamined no later than six months from the date of the first examination. In the event of a second failure, the department's faculty may recommend that the candidate be dismissed from the program or re-examined for a third and final time. The comprehensive examination is normally given near the end of the student's second year of graduate studies, or after the satisfactory completion of the scheduled courses. The student mentor is responsible for the coordination and administration of the comprehensive examination.

### **Specific Requirements for the Master of Science (MS) Degree with Departmental Specialization**

#### **Course Requirements**

All candidates for the MS degree must approve their program of study with a minimum grade point average of 3.0 (scale of 4.0). Any specific course requirements or minimum passing grades will be approved by each department.

#### **Research Proposal**

A written and oral presentation of a research proposal will be required from all MS candidates. In preparing the written proposal the student should follow the F31 guidelines set forth by the National Institutes of Health. The Thesis Committee must approve the proposal.

The candidate will submit a draft to the mentor and the members of the Committee at least two (2) weeks prior to the defense date.

### **Specific Requirements for the Master of Arts (MA) Degree with Departmental Specialization**

#### **Course Requirements**

All candidates for the MA degree with departmental specialization must approve their program of study with a minimum grade point average of 3.0 (scale of 4.0). Written bibliographic reports included in their program of study will be assigned, supervised, and evaluated by a faculty member appointed by the mentor. Each bibliographic report will not carry a value of more than one (1) credit hour. Bibliographic Reports will be evaluated with GPBSF 19. Specific course requirements, minimum passing grades and programs of study will be determined by each department.

### **Specific Requirements for the Master of Arts (MA) Degree in the Biomedical Sciences**

The Universidad Central del Caribe offers the M.A degree in the Biomedical Sciences to those students who wish to obtain a general knowledge but who do not want to specialize in any particular area of the Biomedical Sciences.

#### **Course Requirements**

All candidates for the Master of Arts in the Biomedical Sciences must complete the program with a minimum grade point average of 3.0 (scale of 4.0). Written bibliographic reports included in their program of study will be assigned, supervised, and evaluated by a faculty member appointed by the mentor. Each bibliographic report will carry a value of no more than one (1) credit hour. Bibliographic Reports will be evaluated with GPBSF 19.

## Course Load

### PhD Degree

A full-time load consists of no less than eighteen (18) credits per academic year. Students must register every term; failure to do so will automatically result in the student being withdrawn from the Program. Student must remain enrolled until completing all graduation requirements and delivering the final version of their Dissertation. If the student withdraws and wants to reenter in the Program, the student must reapply and go through the admissions process. Courses of the doctoral program are valid for seven years.

### MS/MA Degree

A full time load consists of not less than nine (9) credits per academic year and two courses per semester. A student enrolled in Thesis work is considered a full-time student. Students must register every term; failure to do so will automatically withdraw the student from the Program. Student must remain registered until completing all graduation requirements and delivering the final version of their Thesis. In the event of withdrawal, a new application must be submitted if the student desires to continue in the Program.

### Enrollment

The following documents are required for student to enroll in:

Year 1 First Semester:

- GPBS Entry Survey

Year 1 Second Semester:

- GPBSF 21 Student Registration Form

Year 2 First Semester

- Individual Development Plan (IDP)
- IDP completion certificate
- GPBS Entry Survey
- GPBSF1 Program of Study
- GPBSF3A MA-MS Mentor Registration or GPBSF3B Ph.D. Mentor Registration
- GPBSF17A MA/MS Graduate Student Annual Progress Report or GPBSF17B PhD Graduate Student Annual Progress Report
- GPBSF 21 Student Registration Form

Year 2 Second Semester:

- GPBSF3C MS/MA Advisory Committee or GPBSF3D PhD Advisory Committee
- GPBSF 21 Student Registration Form

Year 3 First Semester:

- Updated Individual Development Plan (IDP)
- GPBS Entry Survey
- GPBSF5a Request Comprehensive Examination (MA/MS Students)
- GPBSF17A MA/MS Graduate Student Annual Progress Report or GPBSF17B PhD Graduate Student Annual Progress Report
- GPBSF 21 Student Registration Form

Year 3 Second Semester:

- GPBSF 5c Candidacy Exam Request (PhD Students)
- GPBSF 21 Student Registration Form

Year 4 First Semester:

- Updated Individual Development Plan (IDP)
- GPBS Entry Survey
- GPBSF 5d Results of Oral Candidacy Examination or 5e Results of Written Candidacy Exam Request (PhD Students)
- GPBSF17A MA/MS Graduate Student Annual Progress Report or GPBSF17B PhD Graduate Student Annual Progress Report
- GPBSF 21 Student Registration Form

Year 4 Second Semester:

- GPBSF 21 Student Registration Form

Year 5 First Semester

- Updated Individual Development Plan (IDP)
- GPBS Entry Survey
- GPBSF17A MA/MS Graduate Student Annual Progress Report or GPBSF17B PhD Graduate Student Annual Progress Report
- GPBSF 21 Student Registration Form

Year 5 Second Semester:

- GPBSF7a Notification of Thesis / Dissertation Defense
- GPBSF 21 Student Registration Form

**Full-time Research Enrollment**

Students will not enroll in full-time research without completion of the coursework required in their program of study.

**Class Attendance**

According to the Rules and Regulations of the UCC, attendance to classes and all other academic activities is compulsory. Students that do not attend class will be considered as unauthorized withdrawals.

**Coursework at other institutions**

Students may enroll in courses offered at other institutions. They must complete GPBSF18 to request authorization and submit transcripts of the coursework taken to be included in their UCC transcript. These courses will be included in the GPA calculation and count towards the graduation requirements.

If the student has not selected a Dissertation/Thesis Committee, the Graduate Program Office may approve the course.

**Use of online courses offered by other institutions**

The course must be approved by the mentor or OADRGS (if student does not have a mentor). UCC faculty member will supervise the student in the course. Grade will be awarded or approved by UCC faculty member.



### **Ownership of Unpublished Research Data**

The student's research advisor owns all the unpublished research data generated in the laboratory. Students must meet with their advisor to clearly discuss the possibility of using unpublished research data.

Students may include unpublished research data (owned by a former advisor) in their dissertation with authorization of the Research Advisory Committee. This will proceed regardless the concurrence of the data owner. The unpublished data will be sequestered unless the owner authorizes its use. The student can only use the unpublished research data for his or her dissertation.

If the advisor has an obligation to an agency or other resource that is funding research involving a student, the nature of this obligation must be made clear to the student prior to the student beginning her/his work, for example restrictions on publication of results. Such obligations must apply to the student as well.

The Research Advisory Committee will sign a confidentiality agreement if data is sequestered.

### **Recognition for Outstanding Research**

Graduate students with two first author publications will receive a certificate for their meritorious work and a medal at the commencement ceremony. This award is to recognize excellence in graduate student research.

## **COMPACT BETWEEN BIOMEDICAL GRADUATE STUDENTS AND THEIR RESEARCH ADVISORS (Based on AAMC Group on Graduate Research, Education and Training (GREAT))**

Guiding principles, known as the *Compact Between Biomedical Graduate Students and Their Research Advisors*, are intended to support the development of a positive mentoring relationship between the pre-doctoral student and their research advisor. A successful student-mentor relationship requires commitment from the student, mentor, graduate program, and institution. This document offers a set of broad guidelines which are meant to initiate discussions at the local and national levels about the student-mentor relationship.

### **Pre-doctoral training**

Pre-doctoral training entails both formal education in a specific discipline and an apprenticeship in which the graduate student trains under the supervision of one or more investigators who are qualified to fulfill the responsibilities of a mentor. A positive mentoring relationship between the pre-doctoral student and the research advisor is a vital component of the student's preparation to become not only an independent and successful research scientist but also an effective mentor to future graduate students.

Individuals who pursue a biomedical graduate degree are expected to take responsibility for their own scientific and professional development. Faculty who advise students are expected to fulfill the responsibilities of a mentor, including the provision of scientific training, guidance, instruction in the responsible conduct of research and research ethics, and financial support. The faculty advisor also performs a critical function as a scientific role model for the graduate student.

### **Core Tenets of Pre-Doctoral Training Institutional Commitment**

Institutions that train biomedical graduate students must be committed to establishing and maintaining high-quality training programs with the highest scientific and ethical standards. Institutions should work to ensure that students who complete their programs are well-trained and possess the foundational skills and values that will allow them to mature into independent scientific professionals of integrity. Institutions should provide oversight for the length of study, program integrity, stipend levels, benefits, grievance procedures, and other matters relevant to the education of graduate students. Additionally, they should recognize and reward their graduate training faculty.

### **Program Commitment**

Graduate programs should endeavor to establish graduate training programs that provide students with the skills necessary to function independently in a scientific setting by the time they graduate. Programs should strive to maintain scientifically relevant course offerings and research opportunities. Programs should establish clear parameters for outcomes assessment and closely monitor the progress of graduate students during their course of study.

### **Quality Mentoring**

Effective mentoring is crucial for graduate school trainees as they begin their scientific careers. Faculty mentors must commit to dedicating substantial time to graduate students to ensure their scientific, professional and personal development. A relationship of mutual trust and respect should be established between mentors and graduate students to foster healthy interactions and encourage individual growth. Effective mentoring should include teaching the scientific method, providing regular feedback in the form of praise and constructive criticism to foster individual growth, teaching the "ways" of the scientific enterprise, and promoting students' careers by providing appropriate opportunities. Additionally, good graduate school mentors should be careful listeners, actively promote and appreciate diversity, possess and consistently exemplify high ethical standards, recognize the contributions of students in publications and intellectual property, and have a strong record of research accomplishments and financial support.

### **Provide Skills Sets and Counseling that Support a Broad Range of Career Choices**

The institution, training programs, and mentor should provide training relevant to academic, industrial, and research careers that will allow their graduate students to appreciate, navigate, discuss, and develop their career choices. Effective and regular career guidance activities should be provided, including exposure to academic and non-academic career options.

### **Commitments of Graduate Students**

- I acknowledge that I have the primary responsibility for the successful completion of my degree. I will be committed to my graduate education and will demonstrate this by my efforts in the classroom and the research laboratory. I will maintain a high level of professionalism, self-motivation, engagement, scientific curiosity, and ethical standards.
- I will meet regularly with my research advisor and provide him/her with updates on the progress and results of my activities and experiments.
- I will work with my research advisor to develop a thesis/dissertation project. This will include establishing a timeline for each phase of my work. I will strive to meet the established deadlines.
- I will work with my research advisor to select a thesis/dissertation committee. I will commit to meeting with this committee at least annually (or more frequently, according to program guidelines). I will be responsive to the advice of and constructive criticism from my committee.
- I will be knowledgeable of the policies and requirements of my graduate program, graduate school, and institution. I will commit to meeting these requirements, including teaching responsibilities.
- I will attend and participate in laboratory meetings, seminars and journal clubs that are part of my educational program.
- I will comply with all institutional policies, including academic program milestones. I will comply with both the letter and spirit of all institutional safe laboratory practices and animal-use and human-research policies at my institution.
- I will participate in my institution's Responsible Conduct of Research Training Program and practice those guidelines in conducting my thesis/dissertation research.
- I will be a good lab citizen. I will agree to take part in shared laboratory responsibilities and will use laboratory resources carefully and frugally. I will maintain a safe and clean laboratory space. I will be respectful of, tolerant of, and work collegially with all laboratory personnel.
- I will maintain a detailed, organized, and accurate laboratory notebook. I am aware that my original notebooks and all tangible research data are the property of my institution but that I am able to take a copy of my notebooks with me after I complete my thesis/dissertation.
- I will discuss policies on work hours, sick leave and vacation with my research advisor. I will consult with my advisor and notify fellow lab members in advance of any planned absences.
- I will discuss policies on authorship and attendance at professional meetings with my research advisor. I will work with my advisor to submit all relevant research results that are ready for publication in a timely manner prior to my graduation.
- I acknowledge that it is primarily my responsibility to develop my career following the completion of my doctoral degree. I will seek guidance from my research advisor, career counseling services,

thesis/dissertation committee, other mentors, and any other resources available for advice on career plans.

### **Commitments of Research Advisors**

- I will be committed to the life-long mentoring of the graduate student. I will be committed to the education and training of the graduate student as a future member of the scientific community.
- I will be committed to the research project of the graduate student. I will help to plan and direct the graduate student's project, set reasonable and attainable goals, and establish a timeline for completion of the project. I recognize the possibility of conflicts between the interests of externally funded research programs and those of the graduate student, and will not let these interfere with the student's pursuit of his/her thesis/dissertation research.
- I will be committed to meeting one-on-one with the student on a regular basis.
- I will be committed to providing financial resources for the graduate student as appropriate or according to my institution's guidelines, in order for him/her to conduct thesis/dissertation research.
- I will be knowledgeable of, and guide the graduate student through, the requirements and deadlines of his/her graduate program as well as those of the institution, including teaching requirements and human resources guidelines.
- I will help the graduate student select a thesis/dissertation committee. I will assure that this committee meets at least annually (or more frequently, according to program guidelines) to review the graduate student's progress.
- I will lead by example and facilitate the training of the graduate student in complementary skills needed to be a successful scientist, such as oral and written communication skills, grant writing, lab management, animal and human research policies, the ethical conduct of research, and scientific professionalism. I will encourage the student to seek opportunities in teaching, if not required by the student's program.
- I will expect the graduate student to share common laboratory responsibilities and utilize resources carefully and frugally.
- I will not require the graduate student to perform tasks that are unrelated to his/her training program and professional development.
- I will discuss authorship policies regarding papers with the graduate student. I will acknowledge the graduate student's scientific contributions to the work in my laboratory, and I will work with the graduate student to publish his/her work in a timely manner prior to the student's graduation.
- I will discuss intellectual policy issues with the student with regard to disclosure, patent rights and publishing research discoveries.
- I will encourage the graduate student to attend scientific/professional meetings and make an effort to secure and facilitate funding for such activities.
- I will provide career advice and assist in finding a position for the graduate student following his/her graduation. I will provide honest letters of recommendation for his/her next phase of professional development. I will also be accessible to give advice and feedback on career goals.

- I will provide for every graduate student under my supervision an environment that is intellectually stimulating, emotionally supportive, safe, and free of harassment.
- Throughout the graduate student's time in my laboratory, I will be supportive, equitable, accessible, encouraging, and respectful. I will foster the graduate student's professional confidence and encourage critical thinking, skepticism and creativity.

## **TERMINATION OF THE STUDENT-MENTOR RELATIONSHIP**

### **Student Voluntarily Resignation from a Laboratory**

Graduate students are not obligated to remain under the direction of the advisor who accepted them. A student who leaves an advisor shall be allowed one full semester to relocate to another advisor. It is the student's responsibility to find a new advisor. If the student has not succeeded in doing so within one full semester (i.e., the full semester immediately following the student's departure from the advisor's directorship), must leave the GPBS or change his/her status to that of a master degree (non-thesis option) student. Students may only change mentor once.

Students who elect to leave an advisor's directorship must notify the advisor, the Department GPBS Coordinator and the GPBS Office in writing.

### **Dismissal of a Student by his/her mentor**

A graduate student is expected to carry out research as part of his/her degree requirements. Research duties and research progress will be determined by the faculty/research advisor. Unsatisfactory performance in research could lead to loss of research supervision. This applies even if the student's GPA meets or exceeds the minimum set by the School.

A student whose research performance is determined to be unsatisfactory will receive a letter from his/her research advisor listing all deficiencies and/or outlining the level of performance required to continue working with the advisor. This will be communicated to the student at least one month before the end of the semester, and a copy will be provided to the Associate Dean for Research and Graduate Studies for inclusion in the student's file. The deficiencies must be remedied before the end of the semester in order to prevent dismissal from the advisor's research group.

A student who no longer has an advisor may seek another advisor with help from the Associate Dean for Research and Graduate Studies. A student who cannot find a new advisor after one semester must change his/her status to that of a master degree (non-thesis option) or leave the School. A graduate student who is dismissed by the UCC for academic or disciplinary reasons will not be readmitted to the School.

## **EXAM QUESTIONS**

Students will have 10 working days to request points from questions in exams that they believe they have answered correctly. The student must request the revision from the faculty member that prepared the question.

## **GRIEVANCES**

The Associate Dean for Research and Graduate Studies is ultimately responsible for grievances regarding policies and procedures related to graduate education. A grievance properly begins within the student's own department by an appeal to the graduate program coordinator or department chair. If this does not resolve the grievance, the student can present the grievance in writing to the Associate Dean for Research and Graduate Studies. Grievances must state clearly and precisely the basis for appeal and provide supporting evidence that a student's rights have been jeopardized.

For all policies, if there are extenuating circumstances, the Associate Dean for Research and Graduate Studies may extend periods, for one additional term, or make reasonable accommodations at his/her discretion. The Associate Dean may recommend that the grievance be reviewed by the Graduate Program in Biomedical Sciences Committee. The Associate Dean is the final arbiter of Graduate School regulations. Students retain the right to appeal the Associate Dean's decision to the Dean of Medicine.

## **DEFINITIONS**

### **Course Credits**

The value used to calculate the total credit hours for each course is equal to the assigned period of contact hours allotted to a course and defined as lecture, laboratory, discussion, research, or supervised independent study.

The total credit hour value for each course will be determined using the following criteria:

- 1 credit equals 15 contact hours of lecture, discussion or examination or
- 30 contact hours of laboratory (courses or teaching method with a focus on experiential learning), or
- 45 contact hours of supervised independent study or
- 72 contact hours of laboratory research

### **Semester**

One semester will consist of 15 working weeks (5 days/week) of academic work.

### **Academic Year**

1 July to June 30

## GRADUATE PROGRAM IN BIOMEDICAL SCIENCES FORMS

1	GPBSF1	Program of Study
2	GPBSF2	Modification to the Program Study
3	GPBSF3A	MA/MS Mentor Registration
4	GPBSF3B	PhD Mentor Registration
5	GPBSF3C	MA/MS Advisory Committee Registration
6	GPBSF3D	PhD Advisory Committee Registration
7	GPBSF4	Advisory Committee Modification
8	GPBSF5A	Request of the Comprehensive Examination
9	GPBSF5B	Results Comprehensive Examination
10	GPBSF5C	Request of the Candidacy Examination
11	GPBSF5D	Results of Oral Candidacy Examination
12	GPBSF5E	Results of Written Candidacy Examination
13	GPBSF6A	Notification of Research Proposal
14	GPBSF6B	Results Research Proposal Defense
15	GPBSF7A	Notification of Thesis Defense
16	GPBSF7B	Results Thesis/Dissertation Defense
17	GPBSF8	Application for Transfer
18	GPBSF11	Alumni Contact Information
19	GPBSF12	Graduate Program in Biomedical Sciences Exit Survey
20	GPBSF13	Graduate Program In Biomedical Sciences Manual Receipt
21	GPBSF14	Seminar Presentation Evaluation
22	GPBSF15	Laboratory Rotation Agreement
23	GPBSF16	Laboratory Rotation Evaluation
24	GPBSF17A	MS/MA Graduate Student Annual Progress Report
25	GPBSF17B	PhD Graduate Student Annual Progress Report
26	GPBSF18	Request to Take a Course at Another Institution
27	GPBSF19	Evaluation of Bibliographic Report
28	GPBSF21	Student Registration Form
30	GPBSF24	Graduation Requirements Check List



## **BIBLIOGRAPHIC REPORT FORMATTING**

The bibliographic report should be based on information provided and synthesized from primary contemporary literature. The report is meant to provide an overview of a topic. It should be 15-25 pages in length with at least 25 references.

### **Font/Spacing/Formatting**

Must be printed on 8.5" x 11" paper on one side of the page only. They should be printed double space, on standard Arial 11 point font size.

Paragraphs must be indented.

### **Numbering Pages**

The title page is not to be numbered. Beginning with the Introduction every page of the text must be numbered consecutively in Arabic numerals (1, 2, 3, etc.). Page numbers should appear at the center bottom of each page and should lie within the margin requirements.

### **Margins**

Margins must be 1.0 inch on all sides.

### **References**

References should be cited parenthetically in the text by author and year of publication, example of citation format: (Catalucci et al., 2009). Five major references should be dated within the last two years.

The references will be in single space. References will be listed alphabetically by first author's last name. The authors must be cited in the order in which they appear in PubMed, even in cases where more than one author contributed equally to the work. Include all authors' names (do not use "et al.").

Use the format: Boschi D, Cena C, Di Stilo A, Rolando B, Manzini P, Fruttero R, Gasco A. Nitrooxymethyl-Substituted Analogues of Rofecoxib: Synthesis and Pharmacological Characterization. *Chem Biodivers*. 2010 May 20;7(5):1173-1182.

Abbreviate the names of journals according to PubMed. Spell out the names of unlisted journals.

The number of the reference will be on the left margin and not indented.

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## DISSERTATION / THESIS FORMATTING

### Final Copies

The student must deliver the approved document in a flash drive, according to the Dissertation / Thesis Manual, to complete the graduation requirements and receive his/hers diploma. The Graduate Programs in Biomedical Sciences will print and bind three (3) copies of the thesis (one for the student, one for the department and one for the library).

### Information on Dissertation / Thesis

A thesis should be sufficiently complete to allow an independent investigator or scholar to repeat or verify the work leading to the author's results and conclusions. In certain cases, when manuscripts prepared for publication are to be used, the terseness required by the page restrictions of professional journals may prevent authors from meeting this condition with their publishable manuscripts alone. In such cases, the thesis or report must include additional materials (in appendices, if desired) that will ensure independent reproducibility; e.g., tables, descriptions of methods of unproductive or unsuccessful explorations, derivations, and so forth.

### Abstract

An abstract is a summary of the thesis or report to inform prospective readers about its contents. As a brief summary of the candidate's principal research findings, the abstract should state the problem being investigated and outline the method of investigation, the results obtained, and the conclusions reached. In writing the abstract, candidates should keep in mind that it functions chiefly as a guide to students and scholars surveying research in their field. As such, it should provide a concise guide to the entire study it represents. **The abstract should not include internal headings or parenthetical citations of items listed in the bibliography/list of references. Figures and tables should not appear in the abstract.**

### Style and Content

A thesis should be written in a style appropriate to the discipline represented. The faculties of individual departments may establish policies regarding style for their students. In the absence of detailed specifications, the student's committee is responsible for defining the style used. Form, organization, and bibliographical style may be that of pertinent professional publications.

### Manuscript Formatting

Each thesis must have a title page, an abstract, and a table of contents, in addition to the text. Manuscripts should contain the following, unless noted as optional, in the order listed:

#### **All headings must be centered and in uppercase lettering font size 12.**

Title Page  
ADVISORY COMMITTEE  
ABSTRACT  
TABLE OF CONTENTS  
ACKNOWLEDGMENTS (Optional)  
DEDICATION (Optional)  
PREFACE (Optional)  
LIST OF ABBREVIATIONS  
LIST OF SYMBOLS  
LIST OF FIGURES  
LIST OF TABLES  
INTRODUCTION  
CHAPTERS  
CONCLUSION  
REFERENCES

## APPENDICES (Optional)

### **Title Page**

The title must be in uppercase letters and meet margin requirements.

### **Advisory Committee Approval Page**

Follow format illustrated in page 61.

### **Copyright page**

A copyright page may be added after the Advisory Committee Approval Page. The copyright statement will be centralized vertically and horizontally.

### **Chapter Titles**

Will be centered and in upper case lettering.

Format:

CHAPTER 1

TITLE OF CHAPTER 1

### **Abstract**

An abstract is a required part of the graduate degree manuscript. The abstract should not contain a page number and should be no more than 350 words.

### **Physical Requirements**

Submission of the original manuscript is not required, but photocopying should be done with care to ensure that margins on all copies are accurate and consistent and the reproduction service provides clean, spot-free copies. Typographical or other errors must be corrected before making copies.

### **Formatting**

Copies must be printed on one side of the page only and must be distinct and of uniform quality throughout the document. They should be printed on high-quality, 50% - 100% white cotton bond paper and 8.5" x 11" in size.

### **Font**

Prepare using 11 point font size Arial, Helvetica, Palatino Linotype, or Georgia typeface.

The font and size should be consistent throughout the document. All the text will be in black color including tables and graphics.

A Symbol font may be used to insert Greek letters or special characters; the font size requirement still applies.

Do not bold whole pages.

### **Spacing**

Use standard double spacing for the text. Long quotations, footnotes, multi-line captions, and bibliographic entries may be single-spaced. Double spacing should be used between footnotes and bibliographic entries.

Paragraphs must be indented.

### **Abbreviations**

Abbreviations must be spell out the first time they are used. All Abbreviations and their meaning must be included in the list of abbreviations and must be listed in alphabetical order.

### **Numbering Pages**

**The title pages and abstract pages are not to be numbered.** Beginning with the Table of Contents, the List of Figures, List of Tables, Acknowledgments (optional), Dedication (optional) and Preface (optional), use lower case Roman numerals (i, ii, iii, etc.). Beginning with the Introduction or Chapter I, **every page** of the text must be numbered consecutively in Arabic numerals (1, 2, 3, etc.). Page numbers should appear at the center bottom of each page and should lie within the margin requirements.

### **Margins**

Margins on all pages must allow for binding and trimming. Margins must be 1.5 inches on the left and 1 inch at the top, right side, and bottom. Tables and figures should be reduced photographically to meet margin requirements. Illustrations/maps that cannot be reduced to fit within these margins may be expanded to the right by means of a foldout sheet. In such instances, margins must be 1" inch on the left side and the fold placed 1" inch from the right side of the page.

### **Footnotes and Endnotes**

Use Arabic numerals to indicate a note in the text. Notes may be numbered in one of two ways: either consecutively throughout the entire manuscript or consecutively within each chapter and must be consistent throughout the document. Notes can be placed at the bottom of the page (footnotes), at the end of a chapter, or at the end of the document (endnotes). Once chosen, the notation style must be consistent throughout the document. Notes to information within tables should be placed directly below the table to which they apply, not at the bottom of the page along with notes to the text.

### **Figures (Photographs/Tables/Graphs)**

Pictures, tables, and graphs may be done in color if approved by the committee. There must be a page number on each page containing photographs.

Legends will be in single space. The figure and the legend will be in the same page.

The list of tables and figures will include only titles and not descriptions.

The references for any figures obtained from any source must be included.

### **References**

References should be cited parenthetically in the text by author and year of publication, example of citation format: (Catalucci et al., 2009). Five major references should be dated within the last two years. The number of the reference will be on the left margin and not indented.

The references will be in single space. References will be listed alphabetically by first author's last name. The authors must be cited in the order in which they appear in PubMed, even in cases where more than one author contributed equally to the work. Include all authors' names (do not use "et al.").

Use the format: Boschi D, Cena C, Di Stilo A, Rolando B, Manzini P, Fruttero R, Gasco A. Nitrooxymethyl-Substituted Analogues of Rofecoxib: Synthesis and Pharmacological Characterization. *Chem Biodivers*. 2010 May 20;7(5):1173-1182.

Abbreviate the names of journals according to PubMed. Spell out the names of unlisted journals.

Web references: Author or sponsor. Title. Year published. Retrieved Date, from web address.

### **Author's Published Manuscripts**

If approved by the student's committee, previously published manuscripts in the author's name may be incorporated. Published manuscripts will be added as appendices. The information in the manuscript will be complemented with the information in the chapters of the dissertation.

The manuscripts must be paginated consistently with the rest of the document. Only one page number may appear on each page and that is the page number within the final document. Documents must not include material restricted from publication.

**Sequestration**

In unusual circumstances, a student may request the university act to protect the author's rights in the dissertation by temporarily sequestering the work. If a dissertation or thesis contains material believed to be patentable, the student or major professor should send a letter to the Graduate Programs in Biomedical Sciences, requesting sequestration and offering a brief justification for the delay in publication. If the request is approved, all required copies of the manuscript will be kept in the Graduate Programs in Biomedical Sciences until the sequestration period has ended.

**Where the guidelines in this publication are not sufficient, students should contact the Graduate Programs in Biomedical Sciences staff for more detailed information.**

Thesis title page example

**CEMBRANOID-INDUCED CALCIUM SIGNALING**

by

**Juan del Pueblo**

**B.S., Universidad de Puerto Rico, 2000**

**A THESIS**

**Submitted in partial fulfillment of the  
requirements for the degree**

**MASTER OF SCIENCE IN BIOMEDICAL SCIENCES  
IN  
(indicate specialty)**

**Graduate Programs in Biomedical Sciences**

**Universidad Central del Caribe  
Bayamón, PR**

**2002**

**Approved by:**

**Major Professor  
Juan Rodríguez  
Department of Pharmacology**

Dissertation title page example

**CEMBRANOID-INDUCED CALCIUM SIGNALING**

by

**Juan del Pueblo**

**B.S., Universidad de Puerto Rico, 2000**

**A DISSERTATION**

**Submitted in partial fulfillment of the  
requirements for the degree**

**DOCTOR OF PHILOSOPHY  
IN**

**(indicate) CELLULAR AND MOLECULAR BIOLOGY  
(or) NEUROSCIENCE**

**Graduate Programs in Biomedical Sciences**

**Universidad Central del Caribe  
Bayamón, PR**

**2002**

**Approved by:**

**Major Professor  
Juan Rodríguez  
Department of Biochemistry**

Advisory Committee page example

ADVISORY COMMITTEE

Signature

\_\_\_\_\_  
Mentor's Name  
Department

Signature

\_\_\_\_\_  
Committee Member 1 Name  
Department

Signature

\_\_\_\_\_  
Committee Member 2 Name  
Department

Signature

\_\_\_\_\_  
Committee Member 3 Name  
Department

Signature

\_\_\_\_\_  
Committee Member 4 Name  
Department

Month day, year  
Date of Final Approval