BIOMEDICAL SCIENCE MS

PCOM, PCOM Georgia, and PCOM South Georgia

Department website: https://www.pcom.edu/academics/programs-and-degrees/biomedical-sciences/

The PCOM Graduate Program in Biomedical Sciences provides an opportunity for students with baccalaureate degrees to study the biomedical sciences as preparation for science careers or further graduate or professional study. All students enter the program as candidates for the master of science degree. The program presents a broad content base in the basic biomedical sciences with a strong emphasis on human medicine and clinical applications during the first academic year, followed by a concentration in the second year.

Degree completion concentrations are offered in several topics at PCOM's campuses. All first year courses are required for the degree, Master of Science in Biomedical Sciences, or for the certificate of graduate studies for students who choose not to pursue the master's degree. Students who pursue the master's must declare their concentration by the end of their first year.

Concentrations

Code	Title	Hours
BIOM 501	Molecular Basis of Medicine	5
BIOM 503	Human Anatomy I	4
BIOM 504	Biomedical Histology	3
BIOM 507	Biomedical Physiology	3
BIOM 508	Biostatistics	2
BIOM 509	Scientific and Medical Communication Skills	2
BIOM 510	Medical Microbiology and Immunology	3
BIOM 513	Human Anatomy 2	2

Total Credits = 24

During Spring Term of 1st Year, Students Choose a Concentration for 2nd Year. See Concentration Tabs Above

Forensic Biology

Locations

This concentration is only offered at the Philadelphia campus. Students at our Georgia campuses who wish to pursue this option will be required to travel to the Philadelphia campus at least one weekend each month and complete a capstone project.

Combined training in the fields of Biomedical Sciences and Forensic Medicine provides students in the Forensic Biology Concentration with an array of engaging career options. The Forensic Biology Concentration focuses on the emerging demand for medico-legal investigations by medical examiner staff and provides a foundation in forensic investigations as well as autopsy skills.

The Forensic Biology Concentration students receive practical instruction through coursework and an integrated capstone course. Coursework is a combination of online instruction and mostly scheduled as intensive weekend sessions (Friday-Sunday).

As one of the only forensic medicine programs in the region developed and overseen by a board-certified forensic pathologist, all within a medical school environment, PCOM's Master of Science (MS) in Biomedical Sciences (https://www.pcom.edu/academics/programs-and-degrees/biomedical-sciences/) with a concentration in Forensic Biology is uniquely positioned to prepare its graduates for success in the field.

Program Requirements

First Year		
Term 1		**Hours**
Fall		
FMED 500	Pathology for Forensic Medicine	4
	Hours	**4**
Term 2		
Spring		
FMED 501	Principles of Forensic Medicine I	6
	Hours	**6**
Term 3		
Summer		
FMED 502	Principles of Forensic Medicine II	6
FMED 508	Capstone: Integrative Experience	8
	Hours	**14**
	Total Hours	**24**

General studies capstone

PCOM Georgia

Biomedical Sciences– General Studies Capstone concentration
This concentration's upper-level curriculum involves seminars and the composition and presentation of an original manuscript supervised by members of the PCOM faculty on the Georgia (Suwanee) campus location. The curriculum consists of Required and Elective credits, with a total of 24 credits required. Students will be exposed to diverse, relevant, cutting-edge topical areas in biomedical sciences including genetics, microbiology, physiology, pharmacology, virology, neuroscience, and nutritional biochemistry. Courses are offered at the Georgia (Suwanee) campus location.

Upon completion of the General Studies concentration curriculum, the student is expected to be able to:

- Demonstrate an understanding of specific coursework topical information and research methodology.
- Demonstrate competency in the following skills:
  - Development of research design.
  - Approaches to quantitation of results.
  - Written and oral presentation of research.
- Apply their knowledge and skills toward:
  - Entry into/progression through a variety of industrial fields.
  - Entry into/progression through careers in teaching multiple academic levels.
  - Continuation in a variety of advanced graduate and professional studies.

Program Requirements

First Year		
Term 1		**Hours**
Summer		
BIOM 601M	Introduction to Pathology	3
	Hours	**3**

Term 2		
Fall		
Required Courses		
BIOM 612G	Historical Development of Current Themes in Biomedical Research	1
BIOM 650G or BIOM 607G	Special Topics in Biomedical Science Research and Methods or Independent Study/Scientific Composition	2
Choose 2 Courses		
BIOM 603G	Concepts in Pharmacology Toxicology	3
BIOM 604G	Nutritional Biochemistry	3
BIOM 605	Global Regulatory Requirements of Quality	3
BIOM 615G	Biomedical Bases of Medicine	3
	Hours	**15**
Term 3		
Spring		
Required Courses		
BIOM 606G	Analytical Reading, Molecular Reading	1
BIOM 607G or BIOM 650G	Independent Study/Scientific Composition or Special Topics in Biomedical Science Research and Methods	2
Choose 2 Courses		
BIOM 610G	Medical Immunology	3
BIOM 611	Vaccines and Immune Therapies	4
BIOM 628G	Topics in Global Health	3
Total Credits Required: 24		
	Hours	**13**
	Total Hours	**31**

one year pre-clinical

All Campuses (Virtual Coursework)

After completing foundational coursework (https://www.pcom.edu/academics/programs-and-degrees/biomedical-sciences/foundation-year.html), students meeting the program's academic success criteria will have the opportunity to advance to a two-course summer term to complete their master's degree before beginning medical school or pursuing other professional or academic options.

Program Requirements

First Year

Term 1		**Hours**
Summer		
BIOM 601	Introduction to Pathology	3
BIOM 690	Research Methods	3
	Hours	**6**
	Total Hours	**6**

Biomedical Research

All Campuses

Research concentration students will have the opportunity to work one-on-one with a faculty mentor on a novel research project that will advance scientific understanding, culminating in a research thesis and presentation.

Program Requirements PCOM

Second Year

Term 1		**Hours**
BIOM 681	Research Proposal	1
BIOM 691	Biomedical Research	3
	Hours	**4**
Term 2		
BIOM 678	Scientific Communication Skills	1
BIOM 690	Research Methods	2
BIOM 691	Biomedical Research	4
	Hours	**7**
Term 3		
BIOM 683	Thesis Manuscript Development	1
BIOM 692	Biomedical Research	4
	Hours	**5**
Term 4		
BIOM 683	Thesis Manuscript Development	2
BIOM 693	Biomedical Research	3
	Hours	**5**
Term 5		
BIOM 685	Thesis Defense	2
BIOM 687	Thesis Completion	1
	Hours	**3**
	Total Hours	**24**

PCOM Georgia

With prior approval of the program, a very limited number of students can be enrolled in the 2 Year Research Thesis Option. This option allows for qualified first year students to pursue a thesis concentration project during their first year in the program. Student participating in this option are registered in a combination of first year courses (and with approval, second year courses), and research credits equal to the first and second year term credit hour totals for Research Concentration students. The total number of credit hours for program completion is 53 credit hours, and completion of all the academic requirements for the Research Concentration is required. Students may apply for this option by request during the regular application cycle or upon registering for first term courses. Application in writing is made to the Program Director. Acceptance to this option is made on the basis of review of the student's academic credentials, availability and selection of mentors, and program availability. For further information contact the Georgia Campus Program Director.

All students enrolled in the Research Thesis Concentration work under the supervision of a mentor who, in collaboration with the Program Director and thesis committee, ensure and validate completion of all concentration and degree requirements. Prior to their start in the concentration, all students are required to select a program approved mentor and develop with their approved mentor a schedule for completion of the concentration that includes the following components: selection of an appropriate thesis topic; thesis committee selection; development and defense (to the thesis committee) of a thesis research proposal with any necessary institutional and program approvals; participation in a journal club or a regularly attended laboratory meeting experience; creation of a schedule for the thesis manuscript development

and completion. Students will be required to start in the Summer following their foundation year with BIOM 600G and BIOM 691G.

If approved, the student will still be required to complete 24 credits toward their MS degree. A minimum of three credit hours of thesis research will be required each term with the exception of credits taken at the end for the purpose of thesis completion, thesis submission and thesis defense.

** Elective courses must be approved by the mentor and course director. Elective courses can be substituted for Research credits provided students complete enough research credits to complete their project based on time frames approved by joint agreement of mentor, thesis committee, and program director. Electives can also be added as extra courses (in addition to the 53 credits required for graduation). However the student will be enrolled in these courses as out of degree and will be personally responsible for tuition payments for this course work. The only exception would be for courses that the student needs to retake or replace in order to meet the GPA requirement for the degree.

Should a student need additional time to complete their research, an extension for completion must be submitted to the program chair and approved. Once approved, the student will be required to register for a one credit Thesis Completion course; there is no tuition charged for this course.

For the degree to be conferred, the student must defend their thesis and have their thesis submitted to the library for binding. The thesis paper should be completed no later than one semester beyond defense. Should a student need an additional term to complete, they must submit a request to the Program Director for an extension. Once approved, the student will be required to register for one credit.

Summer:

BIOM 600G Critical Analysis of Research

BIOM 691G Biomedical Science Research

Fall:

BIOM 600G Critical Analysis of Research

BIOM 682G Research Proposal

BIOM 692G Biomedical Science Research

Spring:

BIOM 600G Critical Analysis of Research

BIOM 683G Thesis Manuscript Development

BIOM 693G Biomedical Science Research

PCOM South Georgia

Second Year		
Term 1		**Hours**
BIOM 682M	Research Proposal	1
BIOM 691M	Biomedical Research	1-8
	Hours	**2-9**
Term 2		
BIOM 691M	Biomedical Research	1-8
	Hours	**1-8**
Term 3		
BIOM 683M	Thesis Manuscript Development	0-1
BIOM 691M	Biomedical Research	1-8
Total of 23 credit hours required in year two		
	Hours	**1-9**
	Total Hours	**4-26**

Translational Life Sciences
All Campuses (Virtual Coursework)

Upon completion of the Translational Life Sciences Concentration, the student will be able to:

- identify risks and design process controls to reduce risk to product quality.
- determine the correct classification of medical devices in order to design an appropriate development strategy.
- identify primary and secondary clinical trial targets to demonstrate product safety and efficacy.
- describe the medical device and pharmaceutical Quality Systems, and how those systems enable organizations to consistently produce products that are of the purported quality and safety, and meet user needs.
- describe what needs to be studied and demonstrated during medical device and drug product development.
- determine effective ways to monitor and predict product process performance.
- demonstrate practical use of risk management tool.

Program Requirements

First Year		
Term 1		**Hours**
Fall		
BIOM 611	Vaccines and Immune Therapies	4
BIOM 605	Global Regulatory Requirements of Quality	3
	Hours	**7**
Term 2		
Spring		
BIOM 617	Business for the Sciences	3
BIOM 629	Product Development and Validation	3
BIOM 640	Life Science Innovation	3
	Hours	**9**
Term 3		
Summer		
BIOM 635	Risk and Failure Analysis	3
BIOM 642	Life Science Innovation II	2
BIOM 643	Bioinformatics	3
	Hours	**8**
	Total Hours	**24**

CAGS BIOMEDICAL sCIENCE gENERAL sTUDIES
PCOM Georgia
This CAGS is designed for those students who desire to strengthen their academic acumen in the Biomedical sciences in preparation for admission to a health professional program.

The ideal student is one who has successfully completed the first foundational year of studies at PCOM (GA, SGA, PA) and has completed, or is currently pursuing, a MS degree in a second year concentration other than General Studies.

A CAGS in General Studies will only be granted to students who successfully complete a MS degree in Biomedical Sciences at PCOM

Code	Title	Hours
Electives, Choose Four		
BIOM 601M	Introduction to Pathology	3
BIOM 603G	Concepts in Pharmacology Toxicology	3
BIOM 604G	Nutritional Biochemistry	3
BIOM 610G	Medical Immunology	3
BIOM 611G	Medical Microbiology	4
BIOM 613G	Molecular Genetics	3
BIOM 614G	Developmental Neuroscience	3
BIOM 615G	Biomedical Bases of Medicine	3
BIOM 617G	Human Virology Biology	3
BIOM 620G	Human Viruses Vaccines and Infectious Diseases	3
BIOM 621G	Computational Neuroscience	3
BIOM 622G	Advanced Cardio Pulmonary Renal Physiology	3
BIOM 624G	Embryological Basis of Disease	3
BIOM 625G	Current Challenges in Infectious Diseases	3
BIOM 626G	Neurobiology of Disease	3
BIOM 628G	Topics in Global Health	3
BIOM 629G	Advanced Gastrointestinal and Endocrine Physiology	3

Not all courses are offered each term or each year. Courses are either 3 credits or 4 credits. Depending on the combination of four courses completed for the CAGS, the total number of credits will be 12-16 credits. All Biomedical Program and PCOM policies and procedures as presented in the current handbooks apply to students completing a CAGS in General studies.