



**MOREHOUSE**  
COLLEGE

DEPARTMENT OF  
BIOLOGY



*Lawrence Blumer*  
*Chair*

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## INTRODUCTION

This handbook is intended to provide Biology majors with information about department policies and procedures, to acquaint the student with the department faculty, to review requirements for the major and recommended courses and sequences, and to provide information on special programs and opportunities. It also contains a description of courses currently offered in the department. You should familiarize yourself with its content, but be reminded that 1) the information may change, 2) it is important to explore additional sources to supplement this document, and 3) it is the student's responsibility to keep in touch with his advisor and be aware of any changes in policies or requirements.

## **DEPARTMENT OF BIOLOGY MISSION**

The mission of the Morehouse College Biology Department is to:

- Provide students with a fundamental knowledge of Biology.
- Prepare students for and assist them in entering graduate and professional school, and the workforce.
- Strengthen students' reading, writing and quantitative skills.
- Develop students' analytical reasoning and creative thinking skills.
- Expose students to contemporary research techniques in Biology and enhance their understanding of the Scientific Method.
- Conduct meritorious research in the field of Biology.
- Acquaint students with the history of Biology, including the contributions of Black scientists.
- Engender an appreciation among students of the social and economic implications of discoveries in Biology.
- Build students' awareness of ethical and moral issues related to basic tenets in Biology.

## **CAREER OPTIONS AND DEGREES**

The most important thing you will do in college is determine what you enjoy doing and what subjects and activities really excite you. Those are the areas you should pursue. Answering the questions, what do you like and what do you do very well are the first steps to pursuing a successful academic career and finding your life's work. This is more than just taking classes, but getting real life experiences, on and off campus.

## What can you do with a degree in Biology?

There are many career options available to you and it depends on what degree you have, namely a bachelors, graduate or professional school degree or certification. Google “careers in biology”, and speak to your advisor about the myriad of careers that may be pursued with a degree in biology.

Examples of the degrees one can earn in biology are listed below:

a. **Bachelor of Science (B.S.)**

This degree can be obtained in four years at an undergraduate institution.

b. **Master of Science (M.S.); Master of Education (M.Ed.)**

The Master’s degree requires an additional 1-3 years after the Bachelor’s degree depending on if it is with or without a thesis.

c. **Doctor of Philosophy (Ph.D.)**

This is a specialized degree that emphasizes research skills in your major.

It takes approximately 5-7 years after the Bachelor's degree. The most versatile degree, it enables the individual to teach, work in private practice, consult, and/or conduct research.

d. **Doctorate in Education (Ed.D.)**

The Ed.D is a Doctoral degree in education. It takes approximately 5 years after the Bachelor's degree or 1-3 years after the Master's degree. This degree is mainly sought by those interested in a career in administration in the field of education.

e. **Doctor of Medicine (M.D.)**

The MD is a doctoral degree for physicians. The M.D. degree is typically earned in four years after the Bachelor’s degree. Before graduating from a medical school and achieving the Doctor of Medicine degree, most schools require their students to take the United States Medical Licensing Examination (USMLE) Step 1 and both the Clinical

Knowledge and Clinical Skills parts of Step 2. Following the awarding of the M.D., physicians who wish to practice in the United States are required to complete at least one internship year and pass the USMLE Step 3. Depending upon the physician's chosen field, residencies and fellowships involve an additional 3-8 years of training after obtaining the M.D.

These descriptions represent only a small portion of areas of study/work in the field of biology. You should make it a point to ***explore the many options*** available by talking with Department faculty, attending special seminars, and being aware of career/job oriented events sponsored by various student services such as the Office of Career Planning and Placement, Office of Health Professions, and the Office of Science Training.

## ***DEPARTMENT OF BIOLOGY FACULTY AND STAFF***

### ***FULL-TIME FACULTY AND STAFF***

***Dr. Lawrence S. Blumer***, Professor and Chairperson

Ph.D., University of Michigan

Nabrit-Mapp-McBay, Room 134 and Hope Hall, Room 302; [lawrence.blumer@morehouse.edu](mailto:lawrence.blumer@morehouse.edu);  
(470) 639-0283

*Research Interests:*

1. *Ecology, Animal Behavior*
2. *Evolution*
3. *Instructional Laboratory Pedagogy*

***Dr. David B. Cooke III***, Professor

Ph.D., Howard University School of Medicine

Nabrit-Mapp-McBay, Room 129; [david.cooke@morehouse.edu](mailto:david.cooke@morehouse.edu); (470) 639-0232

*Research Interests*

1. *Endocrinology and Cell Metabolism*
2. *Role of Oncogene Expression in Prostate Cancer*
3. *Tumor Progression in Prostate Cancer*

***Dr. Dwann Davenport***, Assistant Professor

Ph.D., Howard University

Nabrit-Mapp-McBay Hall, Room 132; [dwann.davenport@morehouse.edu](mailto:dwann.davenport@morehouse.edu); (470) 639-0448

*Research interest*

1. *Immunoparasitology*

***Dr. Valerie K. Haftel***, Associate Professor

Ph.D., Emory University

Nabrit-Mapp-McBay Hall, Room 323; [valerie.haftel@morehouse.edu](mailto:valerie.haftel@morehouse.edu); (470) 639-0626

*Research Interests:*

1. *Neurobiology*
2. *Physiology*

**Dr. Jeffrey Handy**, Assistant Professor  
Ph.D., Meharry Medical College  
Hope Hall, Room 215; [jeffrey.handy@morehouse.edu](mailto:jeffrey.handy@morehouse.edu); (470) 639-0294

*Research interest*

1. *Adipokines & obesity-associated desensitization to anti-cancer drugs*

**Dr. J. K. Haynes**, Professor  
Ph.D., Brown University  
Nabrit-Mapp-McBay, Room 132; [john.haynes@morehouse.edu](mailto:john.haynes@morehouse.edu); (470) 639-0200

*Research Interests:*

1. Cell Biology
2. Cell Membranes
3. Biochemical Characterization of Sickle Cell Membranes
4. Regulation of Cell Volume
5. Higher Education and Leadership Development

**Dr. Triscia Hendrickson**, Associate Professor  
Ph.D., Emory University  
Nabrit-Mapp-McBay, Room 207; [triscia.hendrickson@morehouse.edu](mailto:triscia.hendrickson@morehouse.edu); (470) 639-0633

*Research Interests:*

1. *Mechanisms that Regulate Cell Motility*

**Dr. Keith M. Howard**, Associate Professor, Associate Provost and Dean of Faculty  
Ph.D., Ohio State University  
Gloster Hall, Room 307; [keith.howard@morehouse.edu](mailto:keith.howard@morehouse.edu); (470) 639-0395

*Research Interests:*

1. *Plant Pathology, Host-Parasite Interactions*
2. *Fungal Biochemistry and Development*
3. *Microbial Physiology*
4. *Ethnobotany and Natural Product Chemistry*

**Dr. Joseph W. McCray**, Associate Professor  
Ph.D., Purdue University  
Nabrit-Mapp-McBay Hall, Room 322; [joseph.mccray@morehouse.edu](mailto:joseph.mccray@morehouse.edu); (470) 639-0281

*Research Interests:*

1. *Immunochemistry*
2. *Peptide Antibodies as Vaccines for the Common Cold and Schistosomiasis*

**Dr. Alexandra Peister**, Associate Professor  
Ph.D., Tulane University  
Hope Hall, Room 315; [alexandra.peister@morehouse.edu](mailto:alexandra.peister@morehouse.edu); (470) 639-0366

*Research Interests:*

1. *Evaluation of Stem Cell Sources for the Production of Engineered Tissues*

**Dr. Wallace Sharif**, Assistant Professor  
Ph.D., Vanderbilt University  
Hope Hall, Room 303; [wallace.sharif@morehouse.edu](mailto:wallace.sharif@morehouse.edu); (470) 639-0337

*Research Interests:*

1. *Molecular Mechanisms of Aging*
2. *Cellular response to stress*

**Dr. Ethell Vereen Jr.**, Assistant Professor  
Ph.D., University of Georgia  
Nabrit-Mapp-McBay Hall, Room 130; [ethell.vereen@morehouse.edu](mailto:ethell.vereen@morehouse.edu); (470) 639-0534

*Research Interests:*

1. *Water Quality*
2. *Environmental Health*
3. *Microbial Ecology*

**Ms. Karen Morris**, Administrative Assistant  
Nabrit-Mapp-McBay, Room 136; [karen.morris@morehouse.edu](mailto:karen.morris@morehouse.edu); (470)-639-0618

## **COURSE REQUIRMENTS FOR A DEGREE IN BIOLOGY**

For a degree in biology, a total of 33 semester hours in the department is required. All Biology majors must take 4 core courses: BIO 111, BIO 112, BIO 251, and BIO 425. Biology majors must also take at least 18 semester hours of biology electives, and three one-hour laboratory courses, for a total of 21 hours. Each laboratory course must be taken concurrently with their associated lecture course. An additional 23/24 semester hours of cognate courses (Chemistry, Mathematics and Physics) are also required.

To complete a degree in Biology, you must have:

- 1) a total of 120 academic semester hours
- 2) a minimum overall GPA of 2.0
- 3) a minimum grade of C in every course used to meet requirements for the major
- 4) completion of required courses, elective courses and cognate courses in the major
- 5) satisfactory completion of general studies courses required in the core curriculum

## **COURSE REQUIRMENTS FOR A MINOR IN BIOLOGY**

To complete a minor in biology, the following is required:

- 1) Core courses: BIO 111 and BIO 112
- 2) A minimum of 8 additional hours of biology courses

## **OTHER MINORS OFFERED THROUGH THE BIOLOGY DEPARTMENT**

The department of biology offers the following minors (for additional information regarding the minors please refer to Morehouse College course catalog 2016-2018):

- 1) Bioinformatics
- 2) Environmental Studies
- 3) Neuroscience
- 4) Public Health Sciences

## Biology Major Curriculum

The curriculum consists of 4 specific areas: Core Courses, Biology Electives, Biology Elective Laboratory, and Cognate Courses.

The major in Biology consists of 33 semester hours, 12 hours in Core Courses and the remainder in electives. Each student must take 21 credit hours of biology elective courses, including three upper-level laboratory courses. Laboratory courses must be taken concurrently with the associated lecture course. As many as two Biology elective courses may be taken outside the department with permission of the department chair. No more than one Public Health Sciences (PHS) course may be taken for Biology elective credit.

### I. Core courses: 12 credit hrs.

General Biology 111 + 111L

General Biology 112 + 112L

Cell Biology 251

Senior Seminar 425

### III. Biology Laboratory courses: 3 credit hrs.

#### Must take concurrent with the lecture:

Molecular Genetics 215L

Cell Biology 251L

Principles of Biochemistry 315L

Principles of Physiology 316L

Principles of Neurobiology 317L

Environmental Studies 497L

Special Topics: Microbiology 321L

### IV. Cognate courses 23-24 credit hrs.

General Chemistry 111 + 111L

General Chemistry 112 + 112L

Organic Chemistry 231 + 231L

Physics 151 or 154 + laboratory

Calculus I 161

Calculus II 162 or Statistics 130

### II. Biology Electives: 18 credit hrs.

#### Biology Electives with Laboratory Offered:

Molecular Genetics 215

Principles of Biochemistry 315

Principles of Physiology 316

Principles of Neurobiology 317

Ecology 320 (may be taken with 497L)

Environmental Studies 497

#### Biology Electives without Laboratory:

Phage Hunters Research 110

Intro to Public Health Sci 240 (PHS)

Ethnobotany 260

Plant Sciences 319

Special Topics: Microbiology 321

Special Topics: Human Anatomy 322

Epidemiology 330 (PHS)

Biostatistics 340 (PHS)

Bioinformatics 350

Biological Research 381--382

Public Health Seminar 450 (PHS)

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## POSSIBLE COURSE SEQUENCE FOR MAJORS IN BIOLOGY

*This is only a sample course sequence. Your specific course sequence will be influenced by your placement in mathematics courses and your placement or exemption from the foreign language requirement.*

*Biology majors should begin Chemistry in the Fall of their Freshman year if they are placed in Calculus I. The course sequence that is ideal for you will be best determined by meeting with your academic advisor in Biology.*

### BACHELOR OF SCIENCE DEGREE IN BIOLOGY

#### Freshman Year

##### **Fall Semester**

MTH 105 College Algebra I	2 hours
MFL 101 Beginning Foreign Language I	3
First Year Experience (FYE) Course (in Arts and Literature, Ideas and Ethics, or Society and Culture, but not in Scientific Discovery)	3
ENG 101 English Composition	3
BIO 111 General Biology with Lab	4
EDU 153 Crown Forum	0
	<b>15 hours</b>

##### **Spring Semester**

MTH 115C-116C College Algebra II & Trigonometry	4 hours
MFL 102 Beginning Foreign Language II	3
Society & Culture	3
ENG 102 English Composition	3
BIO 112 General Biology with Lab	4
EDU 154 Crown Forum	0
	<b>17 hours</b>

#### Sophomore Year

##### **Fall Semester**

MTH 161 Calculus I	4 hours
MFL 201 Intermediate Foreign Language I	3
BIO 251 Cell Biology	3
CHE 111 Elementary Inorganic Chemistry with Lab	4
Health & Physical Education	1
EDU 251 Crown Forum	0
	<b>15 hours</b>

**Spring Semester**

MTH 162 Calculus II or MTH 130 Basic Statistics	3/4 hours
BIO Elective	3
Ideas & Ethics	3
CHE 112 Elementary Inorganic Chemistry with Lab	4
Free Elective	3
EDU 252 Crown Forum	0
	<b>16/17 hours</b>

**Junior Year****Fall Semester**

BIO Elective	3 hours
BIO Lab	1
Free Elective	3
Free Elective	3
CHE 231 Elementary Organic Chemistry with Lab	4
Ideas & Ethics	3
EDU 353 Crown Forum	0
	<b>17 hours</b>

**Spring Semester**

BIO Elective	3 hours
BIO Lab	1
BIO Elective	3
Arts and Literature or Society and Culture	3
Free Elective	3
Health & Physical Education	1
EDU 354 Crown Forum	0
	<b>14 hours</b>

**Senior Year**

**Fall Semester**

BIO Elective	3 hours
PHY 151 or PHY 154 General Physics with lab	4
BIO 425 Senior Seminar	1
Free Elective	3
Free Elective	3
	<b>14 hours</b>

**Spring Semester**

BIO Elective	3 hours
BIO Lab	1
Free Elective	3
	<b>16 hours</b>

**Total Earned Hours is a minimum of 30 per academic year (Fall and Spring Semesters) to maintain scholarships.**

**A minimum of 120 earned hours is required to graduate.**

## **COURSES TAUGHT IN THE BIOLOGY DEPARTMENT 2018-2019**

### **101. Biological Science for Non-Majors**

**3 hours**

Provides students with an understanding of the diversity of living things, their special adaptations to the environment, and their evolutionary and ecological relationships. Course content includes cell structure and function; function of biomolecules; principles of genetics, ecology and evolution; plant development and adaptation; and the function of selected organ systems. In addition to the lecture section, this course has a required laboratory component. The course is a core requirement for non-biology majors.

### **105. Men's Health**

**4 hours**

This course provides an overview of male health issues from scientific and sociopolitical perspectives. Students will explore social, environmental, political, cultural, and behavioral factors that contribute to health disparities among African American men and other groups. All students that successfully complete this course will meet the General Education Scientific Discovery Program Level Learning Outcomes that are captured by the following course specific learning outcomes:

- Communicate biological knowledge in writing, visually, and orally.
- Develop an understanding of basic biological concepts necessary for biological literacy
- Demonstrate a general understanding of biology concepts, with emphasis placed on those skills and content needed for scientific inquiry, reasoning, and communication
- Demonstrate a general understanding of the diverse and expanding landscape of modern biology, forming a foundation for life-long learning on scientific issues

Course restricted to non-science-major First Year Students.

### **106. Introduction to Science Policy**

**4 hours**

This course is a First-Year Experience course under the Scientific Discovery theme. This course applies the scientific method to the practice of innovation. This course will introduce some of the fundamental concepts in science policy and examine the public policy behind the government's role in the science and technology innovation system. This course will also allow students to participate in scientific discovery and conduct research using the scientific method in a laboratory setting. The role of this course is to expose students to the policy process and the interaction between science and policy and policy and science. Topics include the funding of scientific research, the role science policy plays in the African American community (past and present), the translation of scientific discoveries into commercial products, innovation policies, and environmental monitoring. This course aims to equip students with a basic background for involvement in science policymaking. Students will also learn the skill of written and verbal communication for a scientific and policy environment. Course restricted to non-science-major First Year Students.

**110. Phage Hunters: Introduction to Laboratory Research** **4 hours**

This is a research immersion course in which students isolate and characterize bacteriophages (phage) from the environment. Students will receive elective credit for this course toward the biology major. This course is to be taken prior to BIO 111 and admission is by permission of instructor.

**111-112. General Biology** **8 hours**

Required of all biology majors and pre-health professional students. Study of the anatomy, morphology, physiology, molecular biology, ecology, heredity, evolution and interrelationships of life.

**113. Comprehensive Biology** **4 hours**

An introductory course for students in the Division of Science and Mathematics seeking a BS degree in majors other than Biology. This is a one-semester course examining the complexity of life on molecular and organismal levels. The course content includes cell structure and function, genetics, the function of organ systems, and ecology and evolution. This course consists of both a lecture and laboratory component and is a substitute for Bio111 to satisfy part of the Thematic Area requirement for Scientific Discovery for non-Biology science majors.

**123. Mind and Brain** **3 hours**

This course is designed to provide an overview of scientific study of the brain, focusing on topics of broad interest. Material will be presented by the course director as well as several neuroscientists from other institutions who will, as guest lecturers, present material related to their expertise and research. Course topics include drugs and the brain; mental health and emotion; appetite and eating; philosophy of mind, memory, attention and thought; the neuroscience of aging; artificial intelligence; and language and communication.

**199. Introduction to Interdisciplinary Research Collaborations** **2 hours**

This course examines the basic principles of research methodology and exposes students to interdisciplinary research while developing their analytical and presentation skills. The course provides a framework for critical examination of research in biology, chemistry, computer sciences, mathematics, physics, and psychology. Guest lecturers will assist the instructors with interactive learning experiences from diverse areas of interdisciplinary research. *Prerequisite: Consent of Instructor.*

**215. Molecular Genetics** **3 hours**

Focuses on the basics of genetics and integrates classical with molecular genetics. Examines the structure, composition and replication of the genetic material; gene expression through transcription, RNA processing and translation; regulation of gene activity; the nature of mutations; and the applications of recombinant DNA technology. *Prerequisites: BIO 111-112, and CHE 111.*

- 215L. Molecular Genetics Laboratory** **1 hour**  
Laboratory designed to complement BIO 215 lecture. Experiments are designed to demonstrate the repertoire of molecular techniques and concepts that are applied to explore fundamental biological principles. *Must be taken concurrently with BIO 215.*
- 240. Introduction to Public Health Science** **3 hours**  
Designed to give students a strong foundation in the administration and practice of public health; to provide an understanding of the technical, social and political parameters surrounding public health research and practice. Includes a lecture series; field trips to local, state and federal agencies and services; and a research project. This course is identical to PSY 240.
- 251. Cell Biology** **3 hours**  
Examines the molecular mechanisms responsible for cell function, including the anatomy and biochemistry of cellular organelles; the structure and function of macromolecules; and the control of cellular biochemistry and energy production. *Prerequisite: BIO 111-112.*
- 251L. Cell Biology Laboratory** **1 hour**  
Designed to acquaint students with techniques in the field of cell biology, including cytochemical procedures, methods for fractionating organelles and macromolecules, and specific biochemical assays for characterizing macromolecules. *Must be taken concurrently with BIO 251.*
- 260. Ethnobotany** **3 hours**  
Study of cultures as they relate to tradition and use of medicinal plants. This course focuses on the history, anatomy, physiology and biochemistry of these special plants utilized by indigenous cultures with an emphasis on Africa. In particular, aspects of plant defense mechanisms will be explored as it relates to their production of medicinal compounds. Students will be introduced to basic pharmacologic principles relating to these drugs. *Prerequisites: Biology 111, 112*
- 315. Principles of Biochemistry** **3 hours**  
Study of the molecules of living organisms, their interactions in metabolism, and metabolic regulation. Proteins, lipids, carbohydrates, enzymes, and vitamins will be among the molecules examined. *Prerequisites: BIO 111-112 and 251; and CHE 111-112 and 231.*
- 315L. Principles of Biochemistry Laboratory** **1 hour**  
Experiments and exercises designed to demonstrate the basic methods and concepts of modern experimental biochemistry. *Must be taken concurrently with BIO 315.*
- 316. Principles of Physiology** **3 hours**  
Comprehensive, in-depth examination of the basic principles and methods of human physiology. Emphasis will be placed on the structural-functional relationships of the body's organ systems. *Prerequisites: BIO 111-112, 251, and 215; and CHE 111-112 and 231.*

**316L. Principles of Physiology Laboratory****1 hour**

Exercises are designed to illustrate how the human body works, as well as to enhance one's ability to think and reason scientifically. The student will utilize the scientific method in compiling and handling quantitative data while developing skills in utilizing instruments for making physiologic measurements. *Must be taken concurrently with BIO 316.*

**317. Principles of Neurobiology****3 hours**

This class is a broad overview of the nervous system. It will be divided into three parts. The first section covers cellular and molecular neurobiology and examines the physiology of nerve transmission, including the electrical properties of neurons. The second part addresses the function of the sensory and motor systems, which allow us to perceive and manipulate the world around us. The third part of the class focuses on behavioral and clinical neurobiology, including discussions of learning and memory, mood, emotion and consciousness. *Prerequisites: BIO 111-112 and 251 or consent of instructor.*

**319. Plant Sciences****3 hours**

Study of plant biology at all levels of analysis. Topics include morphology and diversity, evolution and systematics, physiology, biochemistry, genetics, development, reproduction, and ecology. Differences and similarities between plant and animal biology, and the dependence of animals on plants will be emphasized. *Prerequisites: BIO 111-112.*

**319L. Plant Sciences Laboratory****1 hour**

Emphasizes experiments and demonstrations on the subjects of plant diversity and anatomy, systematics, biochemistry, physiology, genetics, development, ecology, evolution and reproduction.

**320. Ecology****3 hours**

Comprehensive introduction to the science of ecology, the study of interactions between organisms and their environment. All major areas of ecology are considered in depth, including environmental limiting factors on plants and animals; population growth and demography; evolutionary ecology; interactions between organisms, such as competition, predation and mutualism, community and ecosystem ecology; and global systems ecology. *Prerequisites: BIO 111-112.*

**321-322. Special Topics in Biology****3 hours**

Newly developed courses and courses on specific topics are offered. In 2018-2019, Special Topics courses are planned in Microbiology, Microbiology Laboratory, and Human Anatomy. *Prerequisite: Consent of instructor*

**Human Anatomy**

This class presents a panoramic investigation of the structural integrity of the human body. The initial focus will involve an immediate understanding and utilization of the "language" of anatomy. This will be followed by an examination of the axial appendicular skeleton, joint

articulation and muscles of the limbs. As a means of facilitating systemic dynamics, the interrelationships of the cardiovascular, pulmonary and renal systems will be examined.

*Prerequisites: BIO 111-112, 251, 316*

### **Principles of Microbiology**

Microbiology is an upper level course specifically designed for Biology majors and aimed at juniors and seniors who want to expand their knowledge of the microscopic world, in general, or for use in medical, professional or graduate school. It is taught at a level that should allow for seamless continuity with Medical, Dental and Graduate Microbiology courses. However, it is not a purpose-oriented course - meaning it is a general Microbiology course, not a pre-med microbiology course. The major themes covered in this course are general principles for growth, evolution and classification, description of microbiological life forms, uses of microorganisms, and microorganisms in disease. Special emphasis is placed on topics and applications that relate to humans (microbe-human interactions and the immune system), microbial ecology and environmental microbiology. Students will be expected to develop and demonstrate an understanding of these topics. *Prerequisites: BIO 111-112, 251*

### **Principles of Microbiology Laboratory**

This is a laboratory component to the Principles of Microbiology lecture course. *Corequisite: Principles of Microbiology lecture course*

### **330. Introduction to Epidemiology**

**3 hours**

A study of the distribution and determinants of health-related states and events in populations with a view toward identifying the etiology of diseases. Includes fundamental strategies for epidemiological research, the framework for assessing valid statistical associations and making judgments of causality, measures of disease frequency and association, detailed discussions of the various types of study designs, analysis and interpretation of epidemiological data, and methods for the evaluation and control of chance, bias and confounding in assessing the presence of a valid statistical association.

### **340. Introduction to Biostatistics**

**3 hours**

Designed for applications of statistics in the biomedical and health sciences. Introduces parametric and nonparametric statistical methodology, including descriptive measures, elementary probability, estimation and hypothesis testing, correlation, regression, and single factor analysis of variance. Underlying theory is empirically demonstrated utilizing biomedical applications. Computer-based statistical analysis is used throughout.

### **350. Principles of Bioinformatics**

**3 hours**

Course covers most areas of bioinformatics used in understanding modern biological data, including pair-wise sequence alignments, multiple sequence alignments, basic concepts in probability and statistics as applied to bioinformatics, phylogenetic trees based on sequence alignments, basic genomics and gene finding, protein structure classification and comparison, and an introduction to microarray analysis. It provides a firm foundation in the use of the computer programs and databases central to the analysis of biological data using approaches

based on the use of bioinformatics. *Prerequisite: BIO 111 or 113 with a grade of C or better or consent of the Bioinformatics Program director.*

**381. Biological Research**

**2 hours**

Laboratory biological research under the direction of a faculty member. Designed for the student who is seriously interested in investigating a problem in biology. *Prerequisite: Introduction to Research (BIO 213) or consent of the departmental chairperson.*

**382. Biological Research**

**3 hours**

Designed for the student who desires to continue an investigation that was initiated in BIO 381. *Prerequisite: BIO 381.*

**391-393. Research Collaboration I, II, or III**

**2 hours**

This course allows for students to receive academic credit for scientific research. The student will work with a research mentor to devise and test a hypothesis throughout the semester. Student performance will be assessed by research mentor evaluation, analysis of the scientific proposal, attendance in scientific seminars, and a final presentation. *Prerequisite: Consent of Instructor.*

**425. Senior Seminar**

**1 hour**

Capstone experience that provides an opportunity for students to demonstrate a knowledge of the primary concepts and techniques of modern biology in critically analyzing a paper from the primary literature. A second objective is to teach students how to present a seminar based on a research article. *Prerequisite: Senior standing or consent of the departmental chairperson.*

**450. Public Health Science Seminar and Practicum**

**3 hours**

Designed to provide students with (1) a forum for discussion and critical analysis of contemporary health service issues and (2) a practical experience in a health service agency. A major research project is required of all students enrolled. *Prerequisite: BIO 240.*

**497. Environmental Studies**

**3 hours**

Addresses current environmental problems and research on such problems. Topics include population growth, air and water quality, water resources, energy resources, food production, natural resources and waste disposal, and global climate change. *Prerequisite: BIO 101, or BIO 111-112, or BIO 113, or permission of instructor.*

**497L. Environmental Studies Laboratory**

**1 hour**

Designed to acquaint students with modern experimental techniques in environmental studies. This course requires that students use observation and data evaluation skills to analyze environmental processes and problems *Must be taken concurrently with BIO 497.*

## COURSE PREREQUISITES FOR MAJORS 2018-2019

<b>Course Number</b>	<b>Course Name</b>	<b>Prerequisite(s)</b>
BIO 101	Biological Science for Non-Majors	none
BIO 111 BIO 112	General Biology 111 General Biology 112	None General Biology 111
BIO 113	Comprehensive Biology	none
BIO 123	Mind and Brain	none
BIO 199	Introduction to Interdisciplinary Research Collaborations	Consent of Instructor
BIO 215	Molecular Genetics	BIO 111-112, BIO 251 and CHE 111
BIO 215L	Molecular Genetics Laboratory	taken with BIO 215
BIO 240	Introduction to Public Health Science	none
BIO 251	Cell Biology	BIO 111-112
BIO 251L	Cell Biology Laboratory	taken with BIO 251
BIO 260	Ethnobotany	BIO 111-112
BIO 315	Principles of Biochemistry	BIO 111-112 and BIO 251; CHE 111-112 and CHE 231
BIO 315L	Principles of Biochemistry Laboratory	taken with BIO 315

<b>Course Number</b>	<b>Course Name</b>	<b>Prerequisite(s)</b>
BIO 316	Principles of Physiology	BIO 111-112, BIO 251 and BIO 215; CHE 111-112 and CHE 231
BIO 316L	Principles of Physiology Laboratory	taken with BIO 316
BIO 317	Principles of Neurobiology	BIO 111-112 and BIO 251 or consent of Instructor
BIO 317L	Principles of Neurobiology Laboratory	taken with BIO 317
BIO 319	Plant Sciences	BIO 111-112
BIO 320	Ecology	BIO 111-112
BIO 321-322	Special Topics in Biology	Consent of Instructor
BIO 330	Introduction to Epidemiology	none
BIO 340	Introduction to Biostatistics	none
BIO 350	Principles of Bioinformatics	BIO 111 or 113 with a grade of C or better OR consent of Bioinformatics Program Director
BIO 381	Biological Research	BIO 213 or consent of Department Chairperson
BIO 382	Biological Research	BIO 381

<b>Course Number</b>	<b>Course Name</b>	<b>Prerequisite(s)</b>
BIO 391- 393	Research Collaboration I, II, or II	Consent of Instructor
BIO 425	Senior Seminar	Senior standing or consent of Department Chairperson
BIO 450	Public Health Science Seminar and Practicum	BIO 240
BIO 497	Environmental Studies	BIO 101 or BIO 111-112 or BIO 113 or consent of Instructor
BIO 497L	Environmental Studies	BIO 320 or taken with BIO 497

## THE GENERAL EDUCATION CORE CURRICULUM 2018-2019

The mission of the General Education Program is to ground students in African and African diasporic heritage while empowering students to integrate knowledge and skills from their academic and co-curricular experiences.

### **Core Skills**

#### ***Written Communication***

*All students must complete one of the following selections:*

ENG 101	English Composition
<i>and</i>	
ENG 102	English Composition
<i>(two-semester sequence)</i>	
<i>or</i>	
ENG 103	English Composition
<i>(one-semester course)</i>	

#### ***NOTES:***

- *A student may satisfy the English Composition requirement by completing ENG 103. Students are placed into ENG 103 based on SAT/ACT scores. The student who fulfills the English Composition requirement with ENG 103 is awarded only 3 semester hours.*
- *A grade of “C” or above is required for successful completion of ENG 101-102 or ENG 103.*

#### ***Mathematical and Quantitative Literacy***

*All Students must complete one 3 or 4 credit hour math course above MTH 105 College Algebra I. Biology majors must complete MTH 161 and either MTH 130 or MTH 162. MTH 115C-116C are pre-requisites for MTH 161*

MTH 115C-116C College Algebra II and Trigonometry

MTH 130 Basic Statistics

MTH 161 Calculus I

MTH 162 Calculus II

*NOTE: A grade of “C” or above is required for successful completion of College Algebra I.*

## ***Modern Foreign Language***

*All Students must satisfy the College's Foreign Language Placement Exam prior to enrollment and placement into the following:*

MFL 201 (French, Spanish, German) or introductory MFL course.

Placement into Latin, Japanese, Chinese or Portuguese requires a meeting with the Department Chair of Modern Foreign Languages.

Completion of MFL 201 or earning a minimum score for Intermediate Low on the ACTFL Oral Proficiency Examination satisfies the Modern Foreign Language requirement.

An individual Oral Proficiency Examination for a language taught at Morehouse College will be administered by the MFL faculty upon request to the Department Chair of MFL. The Foreign Language Placement Exam, required for placement in an appropriate course, is not used to exempt students from the MFL requirement.

Other means of demonstrating the required level of foreign language proficiency include:

- Earning a score of 4 on the AP Spanish, French or German Examination
- Passing a CLEP Level 2 examination with a score of 63 or higher
- Graduating from a high school with a Seal of Biliteracy
- Holding an International Baccalaureate high school diploma.
- Transferring appropriate, approved work from another accredited institution

*NOTE: Students who are placed into MFL 101 or 102 must pass with a grade of "D" or better before completing MFL 201. Students may pass MFL 201 with a "D" or better.*

## ***Health and Wellness***

*Students must complete two of the courses listed below. Students must have the Chairperson's approval to enroll in HPED 155 or HPED 156.*

HPED 151            Aquatics and Fitness

HPED 152            Badminton and Fitness

HPED 153	Basketball and Fitness
HPED 154	Tennis and Fitness
HPED 155	Fitness for the Non-Traditional Student
HPED 156	Individualized Fitness for the Non-traditional Student
HPED 157	Weight Training and Fitness

**Thematic Areas**

*Students must complete seven thematic courses (below), one must be a First Year Experience course (FYE) for students entering in 2018-2019.*

***Art and Literature***

*Students must select one course from the list below. Students who take these courses as General Education electives must pass with a “D” or better. A course may be taken to fulfill the major requirement as well as general education, in this instance the course must be passed with a “C” or better.*

ART 100	Cont. Art of the African Diaspora (FYE)
ART 110	Survey of Visual Art
ART 140	African American Art: Mural Development
ENG 121	Immigrant Voices Beyond the Border (FYE)
ENG 122	Blacks in Wonderland (FYE)
ENG 250	World Literature
FLS 105	Afro-Latin American Experience (FYE)
MUS 111	Masterpieces of Music
MUS 116	The Oral Tradition in African American Folk Music
MUS 114	African American Music: Composers and Performers
MUS 203	Introduction to Church Music
MUS 310	History of Jazz

MUS 404	Survey of African American Music
PSY 390	Psychology of Art and Aesthetics

### ***Society and Culture***

*Students must complete two courses from two different disciplines. Students who take these courses as General Education electives must pass with a “D” or better. A course may be taken to fulfill the major requirement as well as general education, in this instance the course must be passed with a “C” or better.*

ECO 201	Principles of Economics (Macro)
ECO 202	Principles of Economics (Micro)
HIS 111	World History: Topical Approach
HIS 112	World History: Topical Approach
HIS 121	Hist. of the African Diaspora to 1900 (FYE)
HIS 122	Hist. of the African Diaspora Since 1800 (FYE)
PSC 100	Politics and Protest (FYE)
PSC 228	Comparative Politics
PSC 251	National Government
PSC 252	State and Local Government
PSC 285	Introduction to International Relations
PSC 294	Introduction to Political Theory
PSY 101	Introduction to Psychology as a Social Science
PSY 240	Psychology of the African American Experience
PSY 265	Developmental Psychology
SOC 101	Introduction to Sociology

SOC 102	Cultural Anthropology
SOC 103	Social Problems
SOC 105	African American Worker (FYE)
SOC 156	Men in Society
SOC 215	Criminology
SOC 255	The Family
SOC 259	Women in Society
UST 261	Introduction to Urban Studies
UST 262	Introduction to Urban Studies

### ***Scientific Discovery***

*Students pursuing a B.S. degree must complete **two** introductory courses from two different science departments. Biology Majors meet this requirement by taking the required cognate courses and BIO 111-112.*

### ***Ideas and Ethics***

*Students must complete two courses from two different disciplines. Students who take these courses as General Education electives must pass with a “D” or better. A course may be taken to fulfill the major requirement as well as general education, in this instance the course must be passed with a “C” or better.*

LSP 101	Thurman, Mays and King (FYE)
LSP 111	Foundations of Leadership
PHI 201	Introduction to Philosophy
PHI 302	Introduction to Philosophical Ethics
REL 201	Introduction to Religion
PSC 294	Introduction to Political Theory

## ***Crown Forum***

Students must earn a P or “pass” grade in Freshman Assembly (EDU 153-154); Sophomore Assembly (EDU 251-252); and Junior Assembly (EDU 353-354). In order to earn a “P” in an assembly, students must attend a minimum of six (6) Crown Forum events.

Crown Forum is a series of special events and presentations that celebrate the great heritage and traditions of Morehouse College; bond students to each other and to a common humanity; heighten sensibility to students’ spiritual and inner selves; increase appreciation of the aesthetics; and sharpen intellectual and critical faculties.

## **DEPARTMENTAL POLICY ON CHEATING**

The Department of Biology has adopted the following policy on cheating. Cheating is a serious matter and will be treated accordingly. This policy is to serve as a preventative measure by informing the students of the consequences of this breach in academic and ethical responsibility. Below is a list of violations that will be penalized. This list presents examples of behaviors that the faculty consider to be violations and is in no way intended to be exhaustive.

The next section of this statement lists the penalties that may be enforced if cheating occurs. In the last section, the procedure for imposing these penalties is explained. This policy will be strictly adhered to by the faculty. Therefore, it is necessary that you read it carefully.

### **VIOLATIONS**

Cheating refers to performing any act that involves intentionally defrauding or violating the rules of your environment. Cheating in the Biology Department may entail:

1. Presenting someone else’s work as your own.
2. Presenting the same piece of work for two different courses without special arrangements from the instructors.
3. Plagiarism - copying the ideas, thoughts or language of another's work without proper identification of the paraphrased or quoted material.
4. Falsification of data, references or any other material, in a research paper.

5. Looking at another student's paper during an examination.
6. Talking to anyone other than the instructor during an exam.
7. Looking at any material (i.e. notes, textbooks, cell phones, or computers) during an exam without the permission of the instructor.
8. Presenting original material (i.e. journal articles, pages from a book) as your own.
9. Illegally obtaining tests or other class material.
10. Refusal to turn in your test paper at the end of the exam.

### **PENALTIES**

If caught cheating, you may encounter one or more of the following penalties.

1. You may receive a zero on the exam or project on which the violation occurred.
2. You may receive an F in the course in which the cheating occurred.
3. You may be referred to the Dean of Student Conduct for additional sanctions.
4. You may be required to change majors.

### **PROCEDURE**

1. The instructor will inform the student (verbally) of the violation as soon as possible. (If possible, within one week of detection of the violation).
2. The instructor will then have the option of giving the student a zero on the examination or project or may choose one of the three other penalties listed above.
3. If one of the three remaining penalties is chosen, the instructor will notify in writing, the student, and the chairperson of the department of the violation and the action taken by the instructor. This will be done within two weeks of the detection of the violation.
4. Documentation of cheating will be turned over to the Dean of Student Conduct for additional sanctions.

## CLASS ATTENDANCE POLICY

Class attendance is required of all students at Morehouse College. Each student is allowed as many unexcused absences as credit hours for the course. A student is expected to attend all classes and not absent himself without adequate cause. It is the responsibility of the student to make up scheduled work missed because of officially excused class absences. Absences from unannounced tests and other assignments may be made up at the discretion of the instructor.

Instructors are expected to outline their attendance requirements at the beginning of the semester and to include these requirements in the course syllabus issued to the students. They are required to maintain attendance records on all students, and at the request of the Provost and Senior Vice President for Academic Affairs, report any student who exceeds the maximum number of unexcused absences. Students who exceed the maximum number of unexcused absences may receive a failing grade in the course. An excused absence does not excuse you from the work you missed. An excused absence permits you to complete missed assignments in a timely manner without penalty. If you know about a planned absence, discuss it with your instructor **prior** to the absence, particularly if an examination will be missed.

## ACADEMIC ADVISEMENT POLICY

### **What is Advising?**

Advising is about more than clearance for registration. Advising is a dynamic relationship between a student and advisor. At the center is a shared responsibility for a coherent education plan that incorporates personal, social, academic and career considerations. Advising focuses on helping students identify life goals, acquire skills and attitudes that promote intellectual growth, and become academically successful. Advising supports the principles and goals of a liberal education as the foundation of a bachelor's degree. We do this by teaching you how your educational experience equips you with broad knowledge, transferable skills and a strong sense of values, ethics and civic engagement.

### **What Students can Expect from Academic Advisors**

#### **Advisors are:**

- Familiar with rules and regulations
- Experienced with designing balanced course loads
- Here to listen to students' concerns and respect individual student values and choices
- Experts in creating educational and professional objectives that suit the students' demonstrated abilities and interests

#### **Advisors will:**

- Encourage and guide students as they define and develop realistic goals
- Monitor and accurately document students' progress toward meeting their goals
- Assist students in gaining decision-making skills
- Maintain confidentiality
- Provide accurate information about general education and major requirements
- Refer students to specialized campus services and resources
- Assist with course selection and registration

## **What Advisors Expect from Students**

### **Students are expected to:**

- Plan ahead and schedule an advising appointment at least twice a semester
- Come in early-when first experiencing difficulty
- Access and read one's email daily
- Be open and willing to consider advice from advisors
- Be respectful of advisors time and call to cancel or reschedule an appointment
- Silence any electronic devices while meeting with advisors
- Take notes during the advising meeting and keep a written record of sessions
- Be prepared with questions and ideas for possible future coursework, internships, study aboard etc.
- Accept responsibility for one's decisions and actions

The Division of Science and Mathematics has an advisor that is here to work with you. Both the Biology Department faculty and the Division advisor are here to assist you with organizing your thoughts and planning for your post-Morehouse future. You should talk with them about the various options and opportunities available during the academic year, summers and after graduation. These include preparing for your post-graduate education, internships, jobs, careers, etc.

Once you turn your official declaration of major form in to Ms. Morris you will be assigned a faculty advisor. If you wish to change advisors you should talk with the chair of the department (Dr. Blumer) and he will assign you a new advisor.

All faculty advisors will be available to meet with their advisees during the scheduled advisement period each semester, just prior to pre-registration for the upcoming semester. Seeking advisement early, making and keeping your advisement appointment, and pre-registering as early as permitted will help ensure that you get the classes you wish and make good progress toward degree.

## GRADUATE and PROFESSIONAL SCHOOL INFORMATION

### Medical School

A major in Biology is not the study of medicine nor is it a requirement for Medical School entry. Choose to major in Biology because you are interested in the study of life.

Speak to your academic advisor and to Mr. Ajit Samarasinghe, Director of the Morehouse College Office of Health Professions (OHP), to learn about the academic preparation you must have for successful entry to medical schools. Apply to a summer pre-medical program to learn more about actually being successful in medical school. Spend a summer working in a hospital or shadowing a working physician. How will you know if you want to be a physician if you have no idea what the work is like?

### Graduate School

Advanced study in biology can lead to a Master's degree or a PhD degree in a more narrowly defined sub-area of biology. Typically, advanced degrees focus on research in a given area. Students pursue advanced degrees to prepare for academic careers (research and teaching), as well as careers in private industry and government.

### When should you start your preparation for graduate or professional school?

**FRESHMAN YEAR** - Start by being serious about your work in college. Earning and maintaining a high grade point average (GPA) is necessary to be a competitive applicant to most programs (at least 3.0 or higher), but learning how to become a biologist should be your central goal. If you are not getting the results you want or expect in your courses, you should ask for advice from your advisor on how to improve, how to change your study methods, to improve your outcomes. Getting engaged in research is the best way to become a biologist. Begin looking at special programs such as MBRS RISE, NIGMS-MARC/U\*STAR (National Institute of General Medical Sciences – Minority Access to Research Careers/Undergraduate Student Training in Academic Research), or the Minority Biomedical Research Support grant to gain research experience. Register with the Morehouse College Office of Science Training (Dr. Valerie Haftel, Director) so you may receive information about scholarships, internships and other special programs. Learn about the research conducted by the faculty at Morehouse College, at Morehouse School of Medicine, at Spelman College, and at Clark Atlanta University where you may seek research opportunities during the academic year and during the summer. Additional opportunities for research participation are available through the neuroscience curriculum at Morehouse as well as the Center for Behavioral Neuroscience. The latter program involves all of the AUC schools, Georgia State University and Emory University and provides multidisciplinary research opportunities in the behavioral neurosciences ([www.cbn-atl.org](http://www.cbn-atl.org)).

**SOPHOMORE YEAR** - "Build up" your resume through summer internships, volunteer work in related fields, and research experience. Begin preparing for the Medical College Admissions Test (MCAT) or the Graduate Records Exam (GRE).

**JUNIOR YEAR** - Start looking seriously into the various areas of biology and the different graduate/medical schools. Be sure to attend the annual graduate/professional school recruitment day program. Send off for information on the requirements for graduate schools. You should also begin preparing for the Graduate Record Examination (GRE). Begin studying for the MCAT in the fall of your junior year, and prepare to take it during the spring semester. Watch for special summer programs. Medical school applications are typically submitted in the summer after your junior year, through the American Medical College Application Service (AMCAS). Medical school interviews can begin as early as Labor Day of your senior year of college.

**SENIOR YEAR** - You should begin submitting applications to graduate schools in the Fall. If you have not taken the GRE by now, do so. By the second semester of your senior year you should be waiting for acceptance letters or making plans to move on to your graduate institution.

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**NOTE:** Information on the various graduate schools may be obtained online, from the library or the placement office. These sources will also provide information on fee waivers for admission applications as well as financial aid opportunities.

## DEPARTMENTAL ORGANIZATIONS

### **Beta Kappa Chi Scientific Honors Society**

This is a national organization devoted to the advancement and promotion of scholarship in science. Membership is open to science majors who maintain a better than average rank in scholarship. The Alpha Beta Chapter was organized at Morehouse in 1946.

## DEPARTMENTAL HONORS

Senior Biology majors wishing to graduate with **Departmental Honors** must meet the following requirements:

1. Student must have a minimum 3.0 overall GPA.
2. Student must receive a “B” or better in all biology courses taken.
3. Student must conduct a scholarly research project under the guidance of one of the departmental faculty members. This project must result in a paper written in standard APA format (senior thesis) and defended before the department faculty in a seminar. In cases where the thesis adviser is at another institution, students must have a co-sponsor from the Morehouse Department of Biology faculty. Application deadlines and detailed guidelines are available from the chairperson. The requirements for honors in biology are still under review by the faculty and are subject to change in subsequent years.

**WORKSHEET  
BIOLOGY MAJOR REQUIREMENTS**

Name:

Advisor:

**CORE COURSES REQUIRED FOR BIOLOGY DEGREE**

<b>Course Number</b>	<b>Name of Course</b>	<b>Credit Hours</b>	<b>Semester Completed</b>
BIO 111	General Biology	4	
BIO 112	General Biology	4	
BIO 251	Cell Biology	3	
BIO 425	Senior Seminar	1	

**BIOLOGY LABS**

Need 3 credit hours. Labs must be taken concurrent with or subsequent to the lecture course

<b>Course Number</b>	<b>Course Name</b>	<b>Credit Hours</b>	<b>Semester Completed</b>
BIO 215L	Molecular Genetics Laboratory	1	
BIO 251L	Cell Biology Laboratory	1	
BIO 315L	Principles of Biochemistry Laboratory	1	
BIO 316L	Principles of Physiology Laboratory	1	

BIO 317L	Principles of Neurobiology Laboratory	1	
BIO 321L	Microbiology Laboratory	1	
BIO 497L	Environmental Studies Laboratory	1	

**BIOLOGY ELECTIVES**  
Need 18 credit hours  
Electives **with** a Laboratory

Course Number	Name of Course	Credit Hours	Semester Completed
BIO 215	Molecular Genetics	3	
BIO 315	Principles of Biochemistry	3	
BIO 316	Principles of Physiology	3	
BIO 317	Principles of Neurobiology	3	
BIO 320	Ecology	3	
BIO 321	Microbiology	3	
BIO 497	Environmental Studies	3	

Electives **without** a Laboratory

Course Number	Course Name	Credit Hours	Semester Completed
BIO 110	Phage Hunters	4	
BIO 199	Interdisciplinary Research	2	
BIO 240	Introduction to Public Health Science	3	

<b>BIO 260</b>	<b>Ethnobotany</b>	<b>3</b>	
<b>BIO/CSC 318</b>	<b>Introduction to DNA Microarray Analysis</b>	<b>4</b>	
<b>BIO 319</b>	<b>Plant Sciences</b>	<b>3</b>	
<b>BIO 322</b>	<b>Special Topics in Biology: Human Anatomy</b>	<b>3</b>	
<b>BIO 330</b>	<b>Introduction to Epidemiology</b>	<b>3</b>	
<b>BIO 340</b>	<b>Introduction to Biostatistics</b>	<b>3</b>	
<b>BIO 350</b>	<b>Principles of Bioinformatics</b>	<b>3</b>	
<b>BIO 381</b>	<b>Biological Research</b>	<b>2</b>	
<b>BIO 382</b>	<b>Biological Research</b>	<b>3</b>	
<b>BIO 391- 393</b>	<b>Research Collaboration I,II,III</b>	<b>2</b>	
<b>BIO 450</b>	<b>Public Health Science Seminar and Practicum</b>	<b>3</b>	

### ADDITIONAL COURSES REQUIRED

<b>Course Number</b>	<b>Name of Course</b>	<b>Credit Hours</b>	<b>Semester Completed</b>
<b>CHE 111</b>	<b>Elementary Inorganic Chemistry</b>	<b>4</b>	
<b>CHEM 112</b>	<b>Elementary Inorganic Chemistry</b>	<b>4</b>	

<b>CHE 231</b>	<b>Elementary Organic Chemistry</b>	<b>4</b>	
<b>MTH 161</b>	<b>Calculus I</b>	<b>4</b>	
<b>MTH 162 or MTH 130</b>	<b>Calculus II or Basic Statistics</b>	<b>4 3</b>	
<b>PHY 151 or PHY 154</b>	<b>General Physics I or Mechanics</b>	<b>4</b>	

**GENERAL EDUCATION CORE COURSES REQUIRED FOR Biology Majors**

This Checklist applies to students who began their studies starting in F2018

<b>Course Number</b>	<b>Name of Course</b>	<b>Credit Hours</b>	<b>Semester Completed</b>	<b>Grade</b>
<b>EDU</b>	<b>Crown Forum (6 semesters)</b>	<b>0</b>		
<b>ENG 101 &amp; 102 or 103</b>	<b>English Composition</b>	<b>3</b>		
<b>MFL 201</b>	<b>Foreign Language</b>	<b>3</b>		
<b>HPED</b>	<b>Physical Education</b>	<b>1</b>		
<b>HPED</b>	<b>Physical Education</b>	<b>1</b>		
<b>Thematic Areas</b>				
<b>AL</b>	<b>Arts and Literature</b>	<b>3</b>		
<b>IE</b>	<b>Ideas and Ethics</b>	<b>3</b>		
<b>IE</b>	<b>Ideas and Ethics</b>	<b>3</b>		
<b>SC</b>	<b>Society and Culture</b>	<b>3</b>		
<b>SC</b>	<b>Society and Culture</b>	<b>3</b>		
<b>First Year Experience (in one of the Thematic Areas above will count for both FYE and the Thematic Area)</b>				
		<b>3</b>		

Graduation requires a minimum of 120 earned semester hours total.