

## Transfer Career Opportunities

The Biology degree with a pre-medicine, pre-veterinarian and pre-dentistry option primarily prepares graduates for transfer into the junior year of programs such as pre-medicine, pre-veterinarian, pre-dentistry, physician assisting, biotechnology, microbiology, molecular biology, genetic or biochemical engineering, pharmacy and physical therapy.

Biology graduates have transferred to colleges throughout Pennsylvania, New Jersey and the Northeast, including Rider University, Temple University, Cornell University, Rutgers University and The College of New Jersey.

Recent graduates have been employed by firms such as Bristol-Myers Squibb, Johnson & Johnson, and various New Jersey governmental departments. Others have successfully completed medical, dental, chiropractic, pharmaceutical, physical/occupational therapy, physician's assistant, veterinary medicine, and other graduate programs.

The Biology facilities include a multimedia computer laboratory as well as specially equipped laboratories for microbiology, genetics/molecular biology, and anatomy/physiology. Students learn a wide variety of investigative techniques, including microscopy, spectrophotometry, and gel electrophoresis. Real-life systems are studied through field trips to sites in the New Jersey Pinelands and elsewhere. A special honors sequence provides eligible students with the opportunity to participate in a research project under the supervision of faculty at nearby Rider University and other institutions.

Most courses may be completed through part-time study in the evening. Course selection and program of study must be approved by an academic advisor. Admission to the Biology option requires a high school diploma or equivalent with at least one year of science (biology, chemistry, or physics) and two years of academic mathematics. Successful completion of the Biology option results in the award of the Associate in Science degree in Liberal Arts and Sciences.

### For Further Information Contact:

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## Want To Pursue A Medical Career?

### BIOLOGY

Pre-Medicine, Pre-Veterinarian,  
Pre-Dentistry Option

Get **Academic Solutions** at Mercer



## BIOLOGY

Pre-Medicine, Pre-Veterinarian,  
Pre-Dentistry Option

ASSOCIATE IN SCIENCE DEGREE



### — PROGRAM OBJECTIVE —

*To prepare students to transfer into a four-year program in biology.*

Majoring in biology can lead to vocations in such fields as medicine, dentistry, veterinarian science, physician assisting, biotechnology, microbiology, molecular biology, genetic or biochemical engineering, pharmacy, and physical therapy.



## Course Descriptions

### BIO 201 - Microbiology\* (4 credits)

*Prerequisite:* BIO 101 or BIO 103 with a minimum C grade or permission of coordinator  
Explores morphology, taxonomy, and metabolism of microbes with emphasis on fungi, protozoa, helminths, viruses and bacteria. Covers the role of microbes in nature, including industrial applications and medical importance; human defense mechanisms; and immunology. The lab develops techniques, reinforces certain lecture content, and introduces new material. 3 lecture/3 laboratory hours

### BIO 202 - Woody Plants (4 credits)

*Prerequisites:* BIO 101, OHT 101 or permission of course coordinator  
Designed for ornamental horticulture, plant science, and biology majors. The lab consists of field studies stressing sight identification of both native and ornamental species. Covers the use of keys, as time permits. 3 lecture/3 laboratory hours

### BIO 203 - Entomology (4 credits)

*Prerequisite:* BIO 101 or BIO 102 or permission of course coordinator  
Intensive survey of the orders of insects, covering comparative anatomy, life cycles, physiology and economic importance. Includes management, preservation and identification methods. 3 lecture/3 laboratory hours

### BIO 204 - Ecology (4 credits)

*Prerequisite:* BIO 101 with a minimum C grade  
Fundamental concepts, theoretical principles, and practical applications of modern ecology with emphasis on the study of the interactions of organisms with each other and with their environment. Lab fieldwork experiences involve the New Jersey Pinelands, a wastewater treatment facility, an electric generating station, botanical gardens, municipal ecological facilities, a wildflower preserve, and marshlands in the region. 3 lecture/3 laboratory hours

### BIO 208 - Genetics\* (4 credits)

*Prerequisite:* BIO 102 with a minimum C grade or consent of instructor  
Explores gene activity at the molecular and organismal levels. Topics include inheritance, chromosome structure and function, gene mapping, genomics, prokaryotic and eukaryotic gene expression, molecular biology, and population genetics. Includes lab exercises in biotechnology, bioinformatics, and classical genetics. 3 lecture/3 laboratory hours

### BIO 293 - Honors Research in Biology I (2 credits)

*Prerequisites:* BIO 102 and CHE 102, minimum 3.0 GPA in biology and chemistry courses, and faculty approval  
Under the guidance of an area sponsor in an industrial or academic environment, students participate in a biology research project. Requires a written and oral presentation to students and faculty. [Fulfills a technical elective requirement in the Biology and Chemistry programs. May be taken with this Biology program option as extra credits.] 6 laboratory hours per week

### BIO 294 - Honors Research in Biology II (2 credits)

*Prerequisite:* BIO 293  
Continuation of BIO 293 for students who are participating in a second semester of research at a cooperating academic or industrial laboratory. Requires a written report and oral presentation to students and faculty. [Fulfills a technical elective requirement in the Biology and Chemistry programs. May be taken with this Biology program option as extra credits.] 6 laboratory hours per week

### CHE 201 - Organic Chemistry I (5 credits)

*Prerequisite:* CHE 102 with a minimum C grade  
Theoretical principles of reaction mechanisms and the synthesis of important classes of organic compounds. Topics include stereoisomerism; alcohols; ethers; nucleophilic substitution; elimination reactions; and instrumental methods. Lab work introduces the synthesis, purification, separation and identification of organic compounds. 3 lecture/4 laboratory hours

### CHE 202 - Organic Chemistry II (5 credits)

*Prerequisite:* CHE 201 with a minimum C grade  
Follows CHE 201 with increased emphasis on spectroscopy and mechanisms. Topics include aromatic compounds; electrophilic substitution reactions; carbonyl chemistry; carboxylic acid derivatives, amines, carbohydrates and proteins. Lab work includes methods of synthesis, purification, and spectroscopic identification of organic compounds. 3 lecture/4 laboratory hours

\*Highly recommended

**Mercer County Community College provides students with the opportunity to start their career education in a supportive, academically rigorous environment and our graduates have a proven record of successful admission into graduate programs in the biological sciences.**

## Course Requirements

### FIRST SEMESTER

	CREDITS
ENG 101 English Composition <sup>1</sup>	3
MAT 151 Calculus I	4
BIO 101 General Biology I	4
CHE 101 General Chemistry I	4
CMN 111 or CMN 112 Communication	3
	<b>18</b>

### SECOND SEMESTER

ENG 102 English Composition <sup>1</sup>	3
BIO 102 General Biology II	4
CHE 102 General Chemistry II	4
General Education <sup>2</sup>	3
	<b>14</b>

### THIRD SEMESTER

CHE 201 Organic Chemistry I	5
MAT 152 Calculus II	4
Biology Elective <sup>3</sup>	4
General Education <sup>2</sup>	3
	<b>16</b>

### FOURTH SEMESTER

HPE 110 Concepts of Health & Fitness	2
CHE 202 Organic Chemistry II	5
Biology Elective <sup>3</sup>	4
General Education <sup>2</sup>	3
	<b>14</b>

**TOTAL 62**

1. ENGLISH COMPOSITION: Initial course determined by placement. Six credits in English Composition required for graduation.
2. APPROVED GENERAL EDUCATION ELECTIVES: Electives should be selected in consultation with a biology faculty advisor.
3. APPROVED BIOLOGY ELECTIVES: Student must select two of these biology courses: BIO201, 202, 203, 204 or 208.



Emmanuel Anim-Danso

Emmanuel Anim-Danso earned his associate's degree in biology and chemistry from MCCC in 2005. He earned his bachelor's degree in Chemistry with a minor in Biochemistry from Rutgers University and plans to continue his education in graduate school with the goal of a medical career. Emmanuel is grateful that Mercer introduced him to laboratory science, which prepared him well when he transferred.

"I hadn't really thought about doing research until I came to Mercer. I got experience in a medical diagnostic lab." He credits Mercer's small class sizes and individual attention with helping him succeed. "Mercer was an excellent stepping stone," he said. "The professors are really great."



MaryJane Harris

MaryJane Harris, a 2007 graduate of MCCC, took advantage of honors research opportunities, where she excelled. She served as student speaker at commencement ceremonies. A former pilot and member of the U.S. Airforce Reserve, she has been accepted to The University of Medicine and Dentistry of New Jersey, School of Osteopathic Medicine. Her goal is to specialize either in neurology or infectious disease.

"Although I already had a bachelor's degree before attending Mercer, I took all of my medical school prerequisite courses there. I was invited to interview at 12 different medical schools, and I was accepted by four of the five schools whose interviews I attended. (I canceled the rest after being accepted at my top choice.) I hope my success will help disprove the rumor among pre-med students that 'medical schools won't accept pre-requisites from community college!'"