Biology

HAGERSTOWN COMMUNITY COLLEGE

What is the Biology Program?

The Biology program at HCC provides a broad general education in biology, chemistry, math, plus study options in a variety of more specific sciences such as physics, geology, anatomy and physiology, microbiology, environmental science, and biotechnology. Students who graduate from this program should be prepared to successfully continue their education at four-year colleges and universities. Biology majors find jobs in the areas of health sciences and services, biotechnology and biomanufacturing, environmental protection, remediation and management.

What can I do with my biology A.S. degree?

Many entry-level positions in biology require a bachelor's degree, so most biology students will prepare for a future career by continuing their education beyond the associate's level degree offered at HCC. A degree in biology is a prerequisite for employment in the following areas:

- Medicine/pharmacy/physician assistant
- Dentistry/orthodontics
- Agriculture/animal and plant sciences
- Environmental and natural resource management
- Biotechnology/biomanufacturing
- Forensics
- Lab technician/discovery research
- Bioethics/public policy/public health
- Science education

More information on careers in biology is available through the American Institute for Biological Sciences (http://www.aibs.org/careers/) and (http://www.learnhowtobecome.org/science-technology-careers/biology/)

What is the employment outlook?

There will always be a need for educated individuals with a strong understanding of biology. Employment opportunities in biology are expected to keep pace with, or surpass, the national average for job growth. Job growth is expected in a number of areas, particularly biotechnology and molecular biology. Opportunities vary depending on the status of local and national economies. For current job outlook information, check the Occupational Outlook Handbook (www.bls.gov/ooh/).

PROGRAM OPTIONS

A.S., Biology Concentration

CAREER OUTLOOK

MEDIAN SALARY

$49K

for Agricultural and Food Science Technicians

EMPLOYMENT

45K jobs in U.S.
7% growth in the next ten years

About 3,700 openings for agricultural and food science technicians are projected each year, on average, over the decade. Many of those openings are expected to result from the need to replace workers who transfer to different occupations or exit the labor force, such as to retire.

(source: www.bls.gov/ooh)

The National Association of Colleges and Employers 2020 Salary Survey reported a median salary of $40,000 for life science technicians with an Associate's degree (Agriculture/Food, Chemical/Environmental areas). Graduates with a bachelor's degree have higher median salaries. Examples include $46,000 as a biological technician $60,000 for a forensic science; $63,000 for wildlife or conservation biologists, while microbiologists can earn $84,000 or more per year. Salaries may be lower or much higher ($100,000+ for researchers, physicians, etc.) depending on the specific degree obtained.

Why should I study Biology at HCC?

The Biology Program introduces students to the many aspects of modern biology, ranging from biotechnology and molecular biology to ecosystem function. The STEM Building provides state-of-the-art learning and laboratory space, equipped with relevant modern technology and ample computer access. HCC students enjoy small class sizes compared to most four-year colleges and universities. Enrollment in biology in biology labs is capped to ensure that students will have opportunities to interact with faculty. HCC's biology faculty members are highly qualified, holding doctoral degrees in biology and additional educator training.

Hands-on learning and the application of the scientific method for discovery and hands-on learning is emphasized in all lab courses and activities. The program requirements stress the integration of math and communication skills to promote student learning. The integration of skills such as critical thinking, application of mathematics for data analysis and problem solving, reading, writing, and scientific literacy throughout the program requirements, ensure that HCC graduates will perform well in the job market or at a four-year school.

The Biology Program coordinates with many community institutions and industries to encourage students to gain knowledge about future career choices through an internship experience. Students in the HCC Biology Program have been able to obtain internships at many prestigious organizations, including but not limited to, the National Institutes

of Health, the Appalachian Fruit Research Station, the Cool and Cold Water Fish Aquaculture Research Station, Lonza Biologicals, MedImmune Corporation, and the National Park Service.

What are the program options?

All biology majors who successfully complete the program will earn an A.S. degree with a concentration in biology. Students may customize their course loads to emphasize their particular areas of interest by choosing either Track A: General Biological Sciences (Ecology/Wildlife, etc.) or Track B: Biomedical Sciences.

Why do HCC students excel at transfer institutions?

The Biology Program at HCC provides a strong foundation in general biology with two track options that align with personal interests and career goals. The faculty and staff are dedicated to student success and routinely provide guidance and academic counseling and support services. Faculty focus their efforts on improving student learning and study skills in order to assist with mastering course content. Students who complete a two-year degree at a community college are often more successful in completing a four-year degree than those who do not attend a community college.

HCC has transfer articulation agreements with several Maryland and out-of-state institutions in the region. While most credits in the program can transfer, students should verify transferability with the institutions they are seeking to attend.

A.S. Degree

Biology

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General Education Requirements **30 Credits**

Arts and Humanities
Select two courses from the approved General Education course list 6
(PHL 103 is preferred for Track B)

Behavioral/Social Sciences
Select two courses from the approved General Education course list 6
(PSY 101 or SOC 101 are preferred for Track B)

Biological/Physical Science
BIO 113 Principles of Biology I..... 4
BIO 114 Principles of Biology II..... 4

Diversity
Select one course from the approved General Education course list 3
(BTC 110 is preferred)

English
ENG 101 English Composition..... 3
**Minimum grade of a "C" or better is required.*

Mathematics
MAT 161 Precalculus II..... 4

Program Requirements **20 credits**
BIO 205 Microbiology..... 4
CHM 103 General Chemistry I 4
CHM 104 General Chemistry II 4
AND 8 Credits of
CHM 203 Organic Chemistry I 4
CHM 204 Organic Chemistry II 4*
OR
PHY 201 General Physics I 4
PHY 202 General Physics II.....4*

**Both Sequences of CHM 203/204 and PHY 201/202 may be required depending on the transfer institution. Please check with an advisor on specific institution requirements*

Track A:
General Biological Sciences (Ecology/Wildlife, etc.)

Choose one course from the following:

Select any Biotechnology (BTC) course 3-4

ENV 201 Fundamentals of Environmental Science..... 4
PHS 105 Descriptive Astronomy..... 3
PHS 111 Earth Science 4

Track B: Biomedical Sciences

BIO 210 Genetics..... 4

Recommended Electives **6-7 credits**
Electives should be selected in consultation with a transfer advisor and/or the transfer institution. Some recommended courses are listed below:

BIO 112 Biology of Disease and Pandemics..... 3
BIO 116 Human Anatomy and Physiology for Allied Health 4
Select any 200-level Biology (BIO) course..... 2-4
Select any Biotechnology (BTC) course 3-4
CHM 101 Introductory College Chemistry..... 4
CHM 203 Organic Chemistry I 4
CHM 204 Organic Chemistry II 4
EDU 101 Introduction to Education..... 3
Select any Engineering Science (EGR) course..... 3-4
ENG 102 Advanced English Composition 3
OR
ENG 112 Technical Writing 3
Select any Environmental Studies (ENV) course . 3-4
MAT 116 Statistical Reasoning..... 3
MAT 160 Precalculus I..... 3
MAT 203 Calculus I 4
PHS 105 Descriptive Astronomy..... 3
PHS 111 Earth Science 4
PHY 201 General Physics I..... 4
PHY 202 General Physics II..... 4

Degree Requirement.....60

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