



## **Biotechnology A.A.S.**

Career Community: Science and Mathematics

Curriculum Code: 0212

Effective: Fall 2022 – Summer 2027

### **Description**

The Biotechnology degree is a laboratory-intensive curriculum which emphasizes the wide-ranging applications of DNA technology including the preparation of gene libraries, Polymerase Chain Reaction forensic DNA methods and bioinformatics. Graduates will be able to work in many areas of biotechnology, such as human genetic disease research, improvement of disease-resistance in plants, enhanced crop production, pharmaceutical research, biological cleanup of environmental pollution, forensic science, or genome sequencing projects. Near the end of the degree the Science Department will make every effort to arrange for internships in university or industrial research laboratories for students who wish to gain further experience. If you plan to transfer to a four-year school, please see an academic advisor before enrolling. Not all courses in this program transfer to all colleges as equivalent. Students planning to transfer should see an academic advisor before enrolling in any course. This program is designed for students interested in molecular biology, biochemistry, genetics, biotechnology, and forensic technologies.

### **Milestone**

In addition to the required General Education courses in Math and English, completion of BIOL 127, BIOL 203, BIOL 204, CHEM 151, and CHEM 161 with a 2.0 or higher is a key component for success in completing this program. Knowledge obtained in these courses is the foundation for learning in other required courses. Students are encouraged to contact their faculty if they need additional assistance with learning the concepts presented in these courses.

### **Additional Information**

BIOL 260, BIOL 275, and CHEM 262 are only offered during Fall semester. BIOL 276 and ISCI 245 are only offered during Spring semester.

### **Contact Information**

Contact the Science Department in the Arts and Sciences Building, Room 3203, telephone number 517-483-1092, or the Academic Advising Department, Gannon Building - StarZone, telephone number 517-483-1904.

### **General Education – Applied Degrees, Recommended Courses**

(For the full list of options, see [General Education](#))

- English Composition or Applied English – *Select one*  
ENGL 121, Composition I, 4 credits / 4 billing hours

- English Composition (second course)/Communications or Applied Communications – *Select one*  
 COMM 120, Dynamics of Communication, 3 credits / 3 billing hours  
 COMM 130, Fundamentals Public Speaking, 3 credits / 3 billing hours  
 ENGL 122, Composition II, 4 credits / 4 billing hours
- Humanities and Fine Arts or Social Sciences or Applied Social Sciences – *Select one*  
 ECON 120, Power, Authority and Exchange, 4 credits / 4 billing hours  
 GEOG 200, World Regional Geography, 4 credits / 4 billing hours  
 HUMS 213, World Civilizations to 1600, 4 credits / 4 billing hours  
 SOCL 120, Introduction to Sociology, 4 credits / 4 billing hours
- Mathematics or Applied Mathematics  
 Program of Study Required Courses will meet this requirement
- Natural Sciences Lab or Applied Science and Technology Lab  
 Program of Study Required Courses will meet this requirement

### Program of Study Required Courses

Course Code	Course Title	Credit / Billing Hours
BIOL 127	Cell Biology	4 / 6
BIOL 203	Microbiology	3 / 3
BIOL 204	Microbiology Laboratory	1 / 3
BIOL 270	Human Genetics	3 / 3
BIOL 275	Molecular Biology I	4 / 6
BIOL 276	Molecular Biology II	4 / 6
CHEM 151	General Chemistry Lecture I	4 / 4
CHEM 152	General Chemistry Lecture II	3 / 3
CHEM 161	General Chemistry Lab I	1 / 3
CHEM 162	General Chemistry Lab II	1 / 3
CHEM 251	Organic Chemistry Lecture I	4 / 4
CHEM 262	Quantitative Analysis	3 / 6
ISCI 245	S.T.E.M. Workplace Practices	4 / 6
MATH 126	Precalculus	5 / 5
STAT 215	Intro to Probability and Stats	4 / 4

### Program of Study Required Courses, Limited Choice – *Select a minimum of 2 credits*

Course Code	Course Title	Credit / Billing Hours
BIOL 128	Organismal Biology	4 / 6
BIOL 260	Botany	4 / 6
CHEM 252	Organic Chemistry Lecture II	4 / 4
CHEM 272	Organic Chemistry Laboratory	2 / 6
CITF 110	Intro Computer Info Systems	3 / 3

Course Code	Course Title	Credit / Billing Hours
CJUS 210	Intro to Forensic Science	3 / 3
PHYS 221	Introductory Physics I	4 / 6
SCIN 287	Science Technology Internship	2-4 / 2-4

### Minimum Total Credit Hours

61 credits / 78 billing hours

### Recommended Course Sequence

Semester I (Fall)
Gen Ed- English Composition or Applied English
CHEM 151 – Milestone course
CHEM 161 – Milestone course
MATH 126

Semester II (Spring)
Gen Ed - English Composition (second course)/ Communications or Applied Communications
BIOL 127 – Milestone course
CHEM 152
CHEM 162
ISCI 245

Semester III (Summer)
Gen Ed - Humanities and Fine Arts or Social Science or Applied Social Science
STAT 215

Semester IV (Fall)
BIOL 203 – Milestone course
BIOL 204 – Milestone course
BIOL 275
CHEM 251
CHEM 262

Semester V (Spring)
BIOL 270
BIOL 276
Limited Choice

*LCC makes every effort to limit revisions to the pathways during their effective timeframe. However, the College reserves the right to update certificate and degree title changes, and make course changes as needed, without prior notice.*