

BIOTECHNOLOGY, ASSOCIATE IN APPLIED SCIENCE



College(s): TR

Program Code: 0215

The Biotechnology Associate in Applied Science program provides the required knowledge and skill set for students pursuing entry-level career opportunities in the biotech industry. Students will receive hands on training in the biomanufacturing of biopharmaceutical products by bacteria, yeast, algae, and eukaryotic cell lines. Students will receive training in the soft skills (written and oral communication, interviewing, leadership, networking, and critical thinking) which will enhance their employability.

Program Requirements

Code	Title	Hours
General Education Coursework		
BIOLOGY 121	Biology I	5
CIS 103	Fundamentals of Programming	3
ENGLISH 101	Composition	3
INTDSP 104	College Success: Special Topics	1
General Education Human Diversity course		3
Required Program Core		
CHEM 201	General Chemistry I	5
CHEM 203	General Chemistry II	5
MICROBIO 233	General Microbiology	4
MICROBIO 234	Applied Microbiology	4
BIOTECH 201	Survey of Biotechnology	2
BIOTECH 211	Laboratory Math for Biotechnology	2
BIOTECH 212	Basic Laboratory Skills and Safety	3
BIOTECH 220	Cell Culture Laboratory	3
BIOTECH 225	Biotechnology Techniques 1	3
BIOTECH 230	Molecular Biology Techniques	3

BIOTECH 235	Biotechnology Techniques 2	3
BIOTECH 245	Bioinformatics for Biotechnology	3
BIOTECH 262	Biomanufacturing	4
Work-Based Learning Courses		
BIOTECH 299	Internship in Biotechnology	2
Total Hours		61

¹ Students must complete a Work-Based Learning course in the summer between year 1 and year 2

Pathway

This is an **example course sequence** for students interested in earning a Associate in Applied Science (AAS) in Biotechnology. If this pathway is followed as outlined, you will earn a Basic Certificate. It does not represent a contract, nor does it guarantee course availability.

Semester-by-Semester Program Plan for Full-Time Students

All plans can be modified to fit the needs of part-time students by adding more semesters.

Semester 1		Hours
BIOLOGY 121	Biology I	5
BIOTECH 201	Survey of Biotechnology	2
BIOTECH 211	Laboratory Math for Biotechnology	2
CHEM 201	General Chemistry I	5
INTDSP 104	College Success: Special Topics	1
Hours		15
Semester 2		Hours
CHEM 203	General Chemistry II	5
BIOTECH 212	Basic Laboratory Skills and Safety	3
ENGLISH 101	Composition	3
MICROBIO 233	General Microbiology	4
Hours		15

Semester 3		
BIOTECH 299	Internship in Biotechnology	2
Hours		2
Semester 4		
BIOTECH 220	Cell Culture Laboratory	3
BIOTECH 225	Biotechnology Techniques 1	3
BIOTECH 230	Molecular Biology Techniques	3
MCROBIO 234	Applied Microbiology	4
Hours		13
Semester 5		
BIOTECH 235	Biotechnology Techniques 2	3
BIOTECH 245	Bioinformatics for Biotechnology	3
BIOTECH 262	Biomanufacturing	4
CIS 103	Fundamentals of Programming (HD)	3
Human Diversity Course		3
Hours		16
Total Hours		61

Choose your courses with your College Advisor.

Careers

This program can prepare students for the jobs listed below. Click on each one to learn more, including average earnings, annual job openings, and how much education people in that field have. For additional guidance and resources on career options, current City Colleges students and alumni can contact the Career Services Office (<https://www.ccc.edu/departments/Pages/Career-Services.aspx>).

Biological Technicians

Job Description

Assist biological and medical scientists. Set up, operate, and maintain laboratory instruments and equipment, monitor experiments, collect data and samples, make observations, and calculate and record results. May analyze organic substances, such as blood, food, and drugs.

Salary Based on Experience Level

Take a look at the average hourly/annual earnings for this career in Cook County

Lightcast earnings figures are based on OES data from the BLS and include base rate, cost of living allowances, guaranteed pay, hazardous-duty pay, incentive pay (including commissions and bonuses), on-call pay, and tips.

Annual Wages

Entry-Level 10 th Percentile	\$40,223
Median 50 th Percentile	\$52,689
Senior-Level 90 th Percentile	\$82,579

Hourly Wages

Entry-Level 10 th Percentile	\$19
Median 50 th Percentile	\$25
Senior-Level 90 th Percentile	\$40

Annual Job Openings

89 annual openings in Cook County

National Education Attainment

Here, you can see the level of education that people in this career complete.

Degree Program	% of Jobs
A high school diploma or less	1.43%
A certificate	0.93%
Some college	1.43%
An Associate degree	0.00%
A Bachelor's degree	63.12%
A Master's or Professional degree	29.36%
A Doctoral degree or more	3.73%

96.21% continue their education beyond an associate degree

Environmental Science and Protection Technicians, Including Health

Job Description

Perform laboratory and field tests to monitor the environment and investigate sources of pollution, including those that affect health, under the direction of an environmental scientist, engineer, or other specialist. May collect samples of gases, soil, water, and other materials for testing.

Salary Based on Experience Level

Take a look at the average hourly/annual earnings for this career in Cook County

Lightcast earnings figures are based on OES data from the BLS and include base rate, cost of living allowances, guaranteed pay, hazardous-duty pay, incentive pay (including commissions and bonuses), on-call pay, and tips.

Annual Wages

Entry-Level 10 th Percentile	\$42,315
Median 50 th Percentile	\$68,418
Senior-Level 90 th Percentile	\$107,657

Hourly Wages

Entry-Level 10 th Percentile	\$20
Median 50 th Percentile	\$33
Senior-Level 90 th Percentile	\$52

Annual Job Openings

48 annual openings in Cook County

National Education Attainment

Here, you can see the level of education that people in this career complete.

Degree Program	% of Jobs
A high school diploma or less	4.55%
A certificate	4.55%
Some college	0.00%
An Associate degree	22.73%

A Bachelor's degree	68.18%
A Master's or Professional degree	0.00%
A Doctoral degree or more	0.00%

68.18% continue their education beyond an associate degree

Agricultural Technicians

Job Description

Work with agricultural scientists in plant, fiber, and animal research, or assist with animal breeding and nutrition. Set up or maintain laboratory equipment and collect samples from crops or animals. Prepare specimens or record data to assist scientists in biology or related life science experiments. Conduct tests and experiments to improve yield and quality of crops or to increase the resistance of plants and animals to disease or insects.

Salary Based on Experience Level

Take a look at the average hourly/annual earnings for this career in Cook County

Lightcast earnings figures are based on OES data from the BLS and include base rate, cost of living allowances, guaranteed pay, hazardous-duty pay, incentive pay (including commissions and bonuses), on-call pay, and tips.

Annual Wages	
Entry-Level 10 th Percentile	\$40,618
Median 50 th Percentile	\$45,874
Senior-Level 90 th Percentile	\$95,630

Hourly Wages	
Entry-Level 10 th Percentile	\$20
Median 50 th Percentile	\$22
Senior-Level 90 th Percentile	\$46

Annual Job Openings

24 annual openings in Cook County

National Education Attainment

Here, you can see the level of education that people in this career complete.

Degree Program	% of Jobs
A high school diploma or less	44.53%
A certificate	0.00%
Some college	5.47%
An Associate degree	13.19%
A Bachelor's degree	24.15%
A Master's or Professional degree	5.47%
A Doctoral degree or more	7.20%

36.82% continue their education beyond an associate degree

Food Science Technicians

Job Description

Work with food scientists or technologists to perform standardized qualitative and quantitative tests to determine physical or chemical properties of food or beverage products. Includes technicians who assist in research and development of production technology, quality control, packaging, processing, and use of foods.

Salary Based on Experience Level

Take a look at the average hourly/annual earnings for this career in Cook County

Lightcast earnings figures are based on OES data from the BLS and include base rate, cost of living allowances, guaranteed pay, hazardous-duty pay, incentive pay (including commissions and bonuses), on-call pay, and tips.

Annual Wages	
Entry-Level 10 th Percentile	\$47,127
Median 50 th Percentile	\$67,532
Senior-Level 90 th Percentile	\$125,441

Hourly Wages	
Entry-Level 10 th Percentile	\$23
Median 50 th Percentile	\$32
Senior-Level 90 th Percentile	\$60

Annual Job Openings

32 annual openings in Cook County

National Education Attainment

Here, you can see the level of education that people in this career complete.

Degree Program	% of Jobs
A high school diploma or less	17.11%
A certificate	0.00%
Some college	12.35%
An Associate degree	23.04%
A Bachelor's degree	32.33%
A Master's or Professional degree	12.78%
A Doctoral degree or more	2.38%

47.49% continue their education beyond an associate degree

Environmental Scientists and Specialists, Including Health

Job Description

Conduct research or perform investigation for the purpose of identifying, abating, or eliminating sources of pollutants or hazards that affect either the environment or public health. Using knowledge of various scientific disciplines, may collect, synthesize, study, report, and recommend action

based on data derived from measurements or observations of air, food, soil, water, and other sources.

Salary Based on Experience Level

Take a look at the average hourly/annual earnings for this career in Cook County

Lightcast earnings figures are based on OES data from the BLS and include base rate, cost of living allowances, guaranteed pay, hazardous-duty pay, incentive pay (including commissions and bonuses), on-call pay, and tips.

Annual Wages

Entry-Level 10 th Percentile	\$58,409
Median 50 th Percentile	\$101,146
Senior-Level 90 th Percentile	\$184,458

Hourly Wages

Entry-Level 10 th Percentile	\$28
Median 50 th Percentile	\$49
Senior-Level 90 th Percentile	\$89

Annual Job Openings

51 annual openings in Cook County

National Education Attainment

Here, you can see the level of education that people in this career complete.

Degree Program	% of Jobs
A high school diploma or less	21.32%
A certificate	0.00%
Some college	0.76%
An Associate degree	0.00%
A Bachelor's degree	60.15%
A Master's or Professional degree	13.78%
A Doctoral degree or more	3.99%

77.92% continue their education beyond an associate degree